CHAPTER-3

PURPOSE-BASED MATERIALS
Chapter-3

3.1 MATERIALS SUGGESTED FOR THE STUDENTS OF SCIENCE

Following exercises are designed to help the students of Science improve their English:

TEXT NO. I

We all know that science plays an important role in the societies in which we live. Many people believe, however, that our progress depends on two different aspects of science. The first of these is the application of the machines, products and systems of applied knowledge that scientists and technologists develop. Through technology, science improves the structure of society and helps now to gain increasing control over its environment. New fibres and drugs, faster and safer means of transport, new systems of applied knowledge (psychiatry, operational research etc.) are some examples of this aspects of Science.

The second aspect is the application by all members of society, from the government official to the ordinary citizen, of the special methods of thought and action that scientists use in their work.

COMPREHENSION

A. Answer the following questions:

(a) Name two ways in which science can help society to develop.

(b) Give some examples of the ways in which science influences everyday life.
(c) What elements of science can the ordinary citizen use in order to help his society to develop?

(d) Write a note on the importance of science.

B. Word study, word building: A common way of making new words in English is by adding standard combinations of letters to existing words, either at the beginning (prefixes) or at the end (Suffixes). By noting these carefully, learners will find it is easy to make large increases in their recognition vocabulary.

C. Use of suffixes.

(a) The suffix -ist e.g. Geology is a geologist, biology is a biologist. Sociology is a ... is a chemist.

(b) Person who studies and applies Anthropology is a ... is a psychologist. Agronomy is a ... is an ecologist.

(c) The suffix (i) an A person who studies Mathematics is a mathematician. Statistics is a ... is an obstetrician.

2. The prefixes in and un-

These prefixes are used to make an adjective negative, e.g. 'incomplete' means 'not complete'; 'unconnected' means 'not connected'.
(a) using in-, make the following negative: accurate; capable; direct; essential; frequent.

(b) Using un-, make the following negative: able; stable; usual; critical; reliable; successful; imaginative; true.

E. Structure study; Use of simple present tense

(a) For actions in the present which happen usually, habitually or generally, e.g. he usually directs his attention towards problems which he notices no satisfactory explanation.

(b) For stating general truths, e.g., 'science plays an important role in the societies in which we live, or for stating scientific laws, e.g. water freezes at 0°C'.

(c) For describing processes in a general way e.g. A scientist observes carefully, applies logical thought to his observations, tries to find relationship in data, etc.

TEXT NO. II

A recent phenomenon in present day science and technology is the increasing trend towards ‘directed’ or ‘programmed’ research; i.e. research whose scope and objectives are predetermined by private or government organizations rather than researchers themselves. Any scientist working for such organizations and investigating in a given field therefore tends to do so in accordance with a plan or programme designed before hand.
At the beginning of the century, however, the situation was quite different. At that time there were no industrial research organizations in the modern sense: the laboratory unit consisted of a few scientists at the most, assisted by one or two technicians, often working with inadequate equipment in unsuitable rooms. Nevertheless, the scientist was free to choose any subject for investigation he liked, since there was no predetermined programme to which he had to conform.

As the century developed, the increasing magnitude and complexity of the problems to be solved and the growing interconnection of different disciplines made it impossible, in many cases, for the individual scientist to deal with the huge mass of new data, techniques and equipment that were required for carrying out research accurately and efficiently. The increasing scale and scope of the experiments needed to test new hypothesis and develop new techniques and industrial processes led to the setting up of research groups or teams using highly complicated equipment in elaborately-designed laboratories. Owing to the large sums of money involved, it was then felt essential to direct these human and material resources into specific channels with clearly-defined objectives. In this way it was considered that the quickest and most practical results could be obtained. This then, was programmed research.

COMPREHENSION

A. Answer the following questions:

(a) What is programmed research?
(b) What differences in working conditions are these between the present day scientist and scientists working at the beginning of the century.

(c) Describe laboratory conditions at the beginning of the century.

(d) What were the origins of programmed research?

B. Word Study:

In the following sentences, use a verb with en as a prefix or suffix to replace the expression in italics:

(a) They increase the length of the pipe.

(b) We made the road wider.

(c) That government department plans to make its laboratories larger.

(d) The tube was made shorter.

C. Add the appropriate suffixes to form the names of specialists in the following scientific disciplines: archaeology; obstetrics; ecology; agronomy; economics; physics; statistics.

TEXT NO. III

Mechanics of Breathing

The most important muscle of inspiration is the diaphragm. This consists of a thin dome-shaped sheet of muscle which is inserted into the lower ribs. It is supplied by the phrenic nerve. When it contracts, the
abdominal contents are forced downward and forward and the vertical
dimension of the chest cavity is increased. In addition the rib margins
are lifted and moved out, causing an increase in the transverse diameter
of the thorax.

In normal tidal breathing, the level of the diaphragm moves about 1
cm or so, but on forced inspiration and expiration, a total excursion of up
to 10 cm may occur. When the diaphragm is paralyzed, it moves up rather
than down with inspiration because the intrathoracis pressure falls. This
is known as paradoxical movement and can be demonstrated at
fluoroscopy when the subject sniffs.

The external intercostal muscles connect adjacent ribs and slope
downward and forward. When they contract, the ribs are pulled upward
and forward, causing an increase in both the lateral and anteroposterior
diameters of the thorax. The lateral dimension increases because of the
"bucket-handle" movement of the ribs. The intercostal muscles are
supplied by intercostal nerves which come off the spinal cord at the same
level. Paralysis of the intercostal muscles alone does not seriously affect
breathing because the diaphragm is so effective.

The accessory muscles of inspiration include the scalene muscles
which elevate the first two ribs and the sternomastoids which raise the
sternum. There is little if any activity in these muscles during quiet
breathing, but during exercise they may contract vigorously. Other
muscles which play a minor role include the alae nasi, which cause
flaring of the nostrils, and small muscles in the neck and head.
This is passive during quiet breathing. The lung and chest wall are elastic and tend to return to their equilibrium position after being actively expanded during inspiration. During exercise and voluntary hyperventilation, expiration becomes active.

COMPREHENSION

A. Answer the following questions:

(a) Read the following text and list all the muscles mentioned:

(b) Which muscles are being described in the following:

- they elevate the first two ribs.
- it is inserted into the lower ribs.
- it is dome-shaped.
- they cause flaring of the nostrils.

B. Find words in the text that mean the opposite of

(a) take out   (b) breath in   (c) active

(d) upper   (e) anterior   (f) decrease

(g) expand

.
C. Make as many sentences as you can using the jumbled information in column A, B, and C.

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>The sternomastoids</td>
<td>connect</td>
<td>the intercostal muscles</td>
</tr>
<tr>
<td>The scalene muscles</td>
<td>raise</td>
<td>the first two ribs</td>
</tr>
<tr>
<td>The intercostal muscles</td>
<td>elevate</td>
<td>the sternum</td>
</tr>
<tr>
<td>The intercostal nerves</td>
<td>cause</td>
<td>adjacent ribs</td>
</tr>
<tr>
<td>The phrenic nerves</td>
<td>force</td>
<td>the diaphragm</td>
</tr>
<tr>
<td>The alae nasi</td>
<td>supply</td>
<td>flaring of the nostrils</td>
</tr>
<tr>
<td>The contraction of the diaphragm</td>
<td></td>
<td>flaring of the nostrils</td>
</tr>
</tbody>
</table>

D. Complete the following table:

<table>
<thead>
<tr>
<th>Cause</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rib margins lifted and moved out</td>
<td>diaphragm moves up.</td>
</tr>
<tr>
<td>Forced inspiration and expiration</td>
<td>increase in lateral and anteroposterior</td>
</tr>
<tr>
<td></td>
<td>diameter of thorax.</td>
</tr>
<tr>
<td>Bucket handle movement of ribs</td>
<td>breathing not effected when intercostal</td>
</tr>
<tr>
<td></td>
<td>muscles paralysed.</td>
</tr>
</tbody>
</table>
Which of the following words do you think will be in the text? Why?
Substance, combination, molecule, essential, important.

Read the text quickly to check your guesses:

A protein is a food substance composed of building blocks called amino acid. There are 22 naturally occurring amino acid in food, and they differ from each other in size and chemical structure. A protein is formed by a combination of amino acids arranged in a pattern something like a long word made from a combination of letters. However, some protein "words" informed by amino acids are of tremendous size and use hundreds or thousands of amino acids in a particular pattern. A protein molecule also may contain mineral elements in its amino acid pattern. An example is haemoglobin, the red colouring factor of blood cells; haemoglobin is a protein made up of amino acids and iron atoms.

Of the 22 amino acids, nine are designated essential amino acids that must be included in your diet on a regular basis in order to maintain normal health. The 13 other amino acids are important, but they can be built by the body's chemical processes from other foods, whereas the body is unable to fabricate essential amino acids. Because the body cannot function normally without the essential amino acids in the daily diet, proteins that are sources of essential amino acids are considered better than proteins that lack them.
A complete protein contains all nine of the essential amino acids—for example, milk and eggs. Gelatin, on the other hand, contains only seven of the essential amino acids, and while it is almost pure protein, gelatin is not a complete protein.

After milk and eggs, the best sources of proteins with a high proportion of essential amino acids are meats, fish and poultry. Some vegetables and grains contain a few of the essential amino acids, but they have to be used in the diet in a skilful way if you are a person who subsists entirely on a vegetarian diet that is not supplemented by milk and eggs. (From: Newsweek Encyclopedia of Family Health and Fitness, 1980).

EXERCISES

A. What do the following numbers refer to in the text? 22, 9, 13

B. Add the following words to the box below: gelatin, eggs, milk, meat, fish, poultry.

Essential Amino Acids

Nine e.g. eggs

Seven

a lot

a few
C. Make as many correct sentences as you can by matching items from the columns in the table below:

<table>
<thead>
<tr>
<th>A protein</th>
<th>is</th>
<th>Composed of</th>
<th>a few essential</th>
</tr>
</thead>
<tbody>
<tr>
<td>A complete protein</td>
<td>Consists of</td>
<td>minimal amino acids 7 of essential amino acids</td>
<td></td>
</tr>
<tr>
<td>Gelatin</td>
<td>includes</td>
<td>minimal amino acids &amp; iron items</td>
<td></td>
</tr>
<tr>
<td>A healthy diet</td>
<td></td>
<td>amino acids</td>
<td></td>
</tr>
</tbody>
</table>

D. Which words in the text means something like:
   (a) be without
   (b) changed into
   (c) make produce
   (d) made up of
   (e) elements
   (f) element
   (g) made use of
   (h) lives on

E. Common prefixes and suffixes:

<table>
<thead>
<tr>
<th>Prefix or suffix</th>
<th>Meaning or function</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) a-(an-)</td>
<td>not, not having</td>
<td>atypical (not typical); anhydrous (not containing water)</td>
</tr>
<tr>
<td>(b) -able</td>
<td>forms adj from V</td>
<td>reliable (able to be relied on)</td>
</tr>
<tr>
<td>(c) aero-</td>
<td>air</td>
<td>aerate (to force air through, e.g. a liquid)</td>
</tr>
<tr>
<td>(d) -age</td>
<td>(1) forms n from V</td>
<td>storage (act of having stored)</td>
</tr>
<tr>
<td></td>
<td>(2) forms abstract n</td>
<td>tonnage (total no. of tons)</td>
</tr>
<tr>
<td></td>
<td>with idea of an aggregate</td>
<td></td>
</tr>
<tr>
<td>(e) -al</td>
<td>(1) forms adj-from n-</td>
<td>mathematical (belonging to mathematics)</td>
</tr>
<tr>
<td></td>
<td>(2) forms n-of action from v-</td>
<td>trial (action of trying and testing)</td>
</tr>
<tr>
<td>(f) -ant (-ent)</td>
<td>forms n-and adj-from v-</td>
<td>resistant (capable of resisting); determinant (that which determines)</td>
</tr>
<tr>
<td>(g) anti-</td>
<td>against</td>
<td>anti-taxin (substance acting against toxins)</td>
</tr>
<tr>
<td>(h) -ate</td>
<td>(1) in the shape of, like</td>
<td>dentate (in the shape of a tooth).</td>
</tr>
<tr>
<td></td>
<td>(2) possessing</td>
<td>nucleate (having a nucleus)</td>
</tr>
<tr>
<td>(i) auto-</td>
<td>self, by itself</td>
<td>autogamic (self-fertilizing)</td>
</tr>
<tr>
<td>(j) bi-</td>
<td>two</td>
<td>bi-metallic (considering of 2 metals)</td>
</tr>
<tr>
<td>(k) bio-</td>
<td>life</td>
<td>biology (science of life)</td>
</tr>
<tr>
<td>(l) co-</td>
<td>together, with</td>
<td>co-worker (person who works with someone else)</td>
</tr>
<tr>
<td>(m) -cy</td>
<td>forms n-from adj.</td>
<td>accuracy (quality of being accurate)</td>
</tr>
<tr>
<td>(n) de-</td>
<td>taken away from</td>
<td>dehydrated (with the water taken out)</td>
</tr>
<tr>
<td>(o) dis-</td>
<td>not</td>
<td>disconnected (not connected)</td>
</tr>
</tbody>
</table>
Sir Walter Raleigh

DOCTORS tell us not to smoke; but a lot of people smoke tobacco every day. Long ago, no one in Europe smoked; the tobacco plant was unknown there. It grew in America, and Christopher Columbus found it there. Later, he returned to Europe and told everyone about tobacco. He said that the American Indians often smoked it.

One way of smoking was this. The American Indians threw some tobacco leaves on a fire. Then they put long tubes in their mouths. The other ends of the tubes were over the fire; so they were able to draw the smoke into their mouths.

About the year 1560 a Frenchman, Jean Nicot, was living in Lisbon, Portugal. He was very interested in all American plants; some of them were very different from the plants of Europe. He (and other men too) used the leaves of the tobacco plant to cure pain. Perhaps a man had a bad pain in a leg or an arm. Nicot put tobacco leaves on the painful place, and tried to cure the pain in that way. We say now that tobacco contains nicotine. The word nicotine comes from this man's name.

Tobacco was used as a cure in many ways. Sometimes a horse was so ill that it could not walk properly. Then a man blew some tobacco smoke into the horse's nose. He believed that this made the horse better! Poor horse! Nobody blows smoke at horses now.
Sir Walter Raleigh was a famous man in the days of Queen Elizabeth the first. He travelled widely and learnt to smoke. Then he returned to England, but he did not stop smoking. He used to smoke two pipes everyday secretly in his room. When anyone came in, he quickly hid his pipe; but one day-the story is told-he was not quick enough. A man came in and found clouds of smoke in the room. More smoke was coming from Raleigh's mouth; so the man got some water and threw it over Raleigh. He believed that Raleigh was burning. He ran out of the house and told everybody about it.

After this, smoking was not a secret. Raleigh told Queen Elizabeth about it. He added that he could weigh his smoke. She did not believe this, and she asked him to explain.

"First" he said, "I shall weigh the tobacco. Then I shall put it in my pipe and smoke it. Then I shall weigh the ashes which remain-I can take them out of the pipe and weigh them on a balance. There will be a great difference between the two weights. The tobacco must be heavier than the ashes. The difference between them must be the weight of the smoke".

It was a good plan, but Raleigh was wrong when anything burns, it needs oxygen. It usually gets the oxygen from the air. When Raleigh's tobacco burned, it did this; but the oxygen was not in the tobacco at the beginning. It was added when Raleigh smoked his pipe. So the smoke was heavier than the difference between the two weights. The weight of the oxygen was added.
Raleigh had a sad life and died in 1618. He died bravely and quietly. He smoked a pipe just before his end.

EXERCISES

A. Put one of the words in each space: cured; pair; weight; ashes; oxygen.

(a) After the great fire, only _______ remained.

(b) I shall have to go to the doctor; I have a _______ in my arm.

(c) When we breathe, we use the _______ of the air.

(d) When Peter was _______, he got up.

(e) The _______ of the lorry was so great that the bridge broke.

B. Answer these questions:

(a) Where was Nicot living in 1560?

(b) Where did Columbus find he tobacco plant?

(c) Where did Sir Walter Raleigh smoke secretly?

(d) Why did the man throw some water over Raleigh?

(e) What mistake did Raleigh make when he was weighing the ashes?

C. Put the proper words in the spaces. The piece will help you.

(a) Nobody _______ Europe smoked at that time.
(b) He can easily draw the smoke ———— his mouth.

(c) We found Peter ———— his room.

(d) They are going to tell the pilot ———— the aircraft.

(e) Galileo died ———— 1642.

D. Notice: tobacco was used as a cure. Form A. This means: They used tobacco as a cure - form B. Those sentences are in form B. Put them into form A.

(a) They never use tobacco as a cure now.

(b) They will repair the bicycle immediately.

(c) They have spent all the money.

(d) He has cured the pain.

(e) They weighed the ashes.

E. Notice: A horse was so ill that it could not walk (This show the result of being ill).

Complete these sentences:

(a) He smoked so much that he ———— (ill)

(b) The salt was so heavy that the balance ————

(c) The pain was so terrible that ————.
(d) Newton worked-hard ———— he forgot his friends.

(e) The horse's legs were so weak ————.

TEXT NO. VI

Light

LIGHT travels very fast. It moves at 186,300 miles a second that is 300,000 kilometres a second. Light reaches us from the moon in less than a second and a half. The moon is about 238,800 miles from us; it is more than 380,000 kilometre away.

Light from the sun reaches us in $8\frac{1}{2}$ minutes. The sun is about 93 million miles from the earth. The stars are farther away than the sun. Light from the nearest star reaches us in about four years. When you look at a star you do not see its present condition. You see it as it used to be. Light from some stars takes hundreds of years to reach us. We never see a star as it is now. We see it as it was long ago: perhaps hundreds or thousands years ago.

Astronomers watch the stars through big telescopes. Some of these telescopes have glass lenses in them. A lens is a round piece of glass, but it is not flat. The side of a lens is curved. The middle part of some lenses is thicker than the edge. In other lenses, the edge is thicker than the middle part.

Cameras have lenses at the front. A very good lens costs a lot of money; it costs more than any other part of the camera.
A ray of light usually travels in a straight line; but sometimes it bends. The light reaches the film of a camera through the lens. It leaves the air and goes into the glass; then it bends. The ray also bends when it leaves the glass. Light also bends when it reaches the lens of a telescope.

Some telescope do not use a lens at the front. They use a curved mirror at the back. A curved mirror is better than a lens in some ways.

The world's biggest telescope is on Mount Palomar in America. Near it, on Mount Wilson, there is another big telescope. Both of them use mirrors, not lenses at the front with these great telescopes astronomers can see stars and other things very far away. Some of these things are not only stars. They are great groups of stars.

The earth is in a great group of stars. There are about 100,000,000,000 stars in it. We call this group the galaxy. Outside the galaxy there is empty space; but thousands of millions of miles away there is another galaxy. Light from this other galaxy reaches us after about 2 million years. There are millions of these galaxies; and they appear to be rushing away from us. The astronomers at Mount Palomar and Mount Wilson can see some of them well; but they cannot see one as it is now. The light takes millions of years to arrive there; so they see a distant galaxy as it used to be. The light left it millions of years ago. It travelled across space and then went into an astronomer's eye. Perhaps no men were living when it started.
EXERCISES

A. Put one of the given words in each space: astronomer; telescope; lens; millor; galaxy.

(a) The sun is a star in our ________.

(b) Peter's camera has a ________ at the front.

(c) The ________ watched the moon all night.

(d) Mary combed her hair in front of the ________.

(e) The world's biggest ________ in on Mount Palomar.

B. Answer these questions:

(a) How fast does light travel?

(b) How far is the sun from the earth?

(c) What work do astronomers do?

(d) What is the distance between the moon and the earth?

(e) Are most of the galaxies coming towards us?

C. Put the proper word in the space:

(a) The light from that star reaches us ________ eighty years.

(b) Yesterday peter looked ________ a big telescope.

(c) Light usually moves ________ a straight line.
(d) The light has travelled _______ space.

(e) A galaxy is a very large group _______ stars.

D. Notice: Perhaps no men were living when it started. Complete these sentences:

(a) Peter was tired when he _______.

(b) You do not see the present condition of a galaxy when you _______.

(c) Rays of light bend when _______.

(d) When the doctor cures our pain, we _______.

(e) Metal expands when we _______.

E. Notice: A curved mirror.

F. Put one of the given words in each space:

beaten; broken; coloured; measured; spoken.

(a) Put the _______ amount into the bottle.

(b) A _______ bottle does not hold water.

(c) The _______ army marched sadly across the desert.

(d) _______ words are often forgotten.

(e) We ought to use _______ ink here; red is best.

G. Put one of the gives words in each space: unfinished; untested; unpicked; unpacked; unchanged.
(a) A lot of ________ work lay on the desk.

(b) The ________ condition of the sick man made the doctor sick.

(c) Peter saw a lot of ________ fruit on the trees.

(d) There was a box in the middle of the floor; and the floor itself was covered with ________ books.

(e) He did not want to fly in an ________ aircraft.

TEXT NO. VII

Flying

Men have always wanted to fly like birds. The birds can fly easily because they are light; but men's bodies are heavier.

Men first went up into the air in balloons. These are big bags, and they are filled with gas. Hydrogen is a useful gas from balloons. It is lighter than air. Helium is also lighter than air, but it costs a lot of money. So balloons were (and are) usually filled with hydrogen.

Helium was first discovered in the sun. After that it was also found on the earth. Hot air is also light, and some early balloons used hot air. You have seen hot smoke rising over a fire. Bits of paper does the same. The hot air takes them up. Some balloons carries fires under them; then they took men up into the sky. It was not a safe form of travel.

Hydrogen burns easily in oxygen or in air. So if the hydrogen escapes, it may burn. But this does not happen often. There is no fire in the usual form of balloon.
Balloons have to fly with the wind. They have no engine, to derive them against the wind. Later, men made airships. These were balloons with engines, but they were not round. They were long, and the engines were at the back. They were also filled with hydrogen and some of them caught fire. The hydrogen escaped, and the engines heated it. Then the airship was completely burnt in a few seconds.

Aircraft with wings now take people across the world. Powerful engines drive these machines across the sky. Some of the engines are like the engines of motor-cars, but they are more powerful.

There is another kind of engine which we call a jet engine. Sir Frank Whittle invented the jet engine. In May 1941 his new engine was fixed in an aircraft, and the aircraft flew quite well. At the same time, Germans were also building a jet engine; but neither country told the other of course.

Jet engines are very powerful. Usually two, three or four are enough; but some big aircraft have six. Anyone in a jet plane feels the power of the engines. Jet planes travel at about six hundred miles an hour. Soon they will travel faster than that; they may perhaps travel faster than sound (Sound travels at about 1,100 feet a second. That is about 760 mile an hour). Then we shall not hear them until they have gone. They will leave their noise behind them.
EXERCISES

A. Put one of the given words in each space: balloon; hydrogen; helium; wing; jet.

(a) ________ was first found on the sun.
(b) A ________ has to travel with the wind.
(c) There were no ________ planes in 1930.
(d) The ________ of an aircraft is usually fixed.
(e) Balloons are usually filled with ________.

B. Notice: The birds can fly easily because they are light.

Complete these sentences properly:

(a) Jet planes fly fast because they ________.
(b) Men cannot fly easily because ________.
(c) Hot air rises because ________.
(d) The metal ring contracted because ________.
(e) Edison used carbon because it ________.

C. Notice: There is another engine which we call a jet engine.

Complete these sentences properly:

(a) This is the jet engine which Whittle ________.
(b) Here is the lens which belongs ________.
(c) Mary has found the mirror which ________.
(d) Copper is a metal which ________.
(e) The astronomer who is looking at the star is ________.

D. Put the right word in each space:
(a) Peter wants ________ swim like a fish.
(b) Helium was found in the sun, and then it was found ________ the earth.
(c) It broke ________ a few seconds.
(d) Airships were filled ________ hydrogen.
(e) Peter ran out ________ the room.
(f) Sound travels ________ about 760 miles an hour.
(g) A jet engine was made ________ 1941.
(h) Wood burns easily ________ oxygen.
(i) Some old balloons carried fires ________ them.
(j) That house has another door ________ the back.
TEXT NO. VIII

Scientific Method

Science has been called a lot of 'Olagies'. 'Logy' is a Greek word meaning 'speech' or a branch of study. 'Logic' itself is the study of reasoning.

We will start our 'ologies' with 'biology' (bio-life). Biology has the sub-divisions Zoology (the study of animals) and Botany (the study of plants). In each study, we learn about the morphology (morph=shape); the physiology (physio=natural function; that is, physiology is the study of the ways in which organs, or parts of plants and animals, do the work they have to do); the evolution (the way in which a plant or animal has come from earlier plants or animals); and the distribution (that is, the places where the plants or animals live, and the numbers of plants and animals in those places). The study of the ways in which it happens that offspring (the 'children' of men, or animals or plants) are like their parents is called Genetics (gen=to be born). There is also a study of the development or growth of offspring before they are born; this is Embryology. These are all 'ologies' connected with Biology, but those are enough for now!

Science means knowledge, but not all knowledge is science. I know-from my own eyesight- that our dog, Chippy, likes papayas; I know-from a book-that Akbar was the grandson of Babar, and died in 1605; and I know-from the radio-that India did not do well in the latest Test Matches.
We can call those pieces of knowledge 'facts', but they are not science. Science starts with facts, but not with isolated facts, that is, not with facts which have nothing to do with each other, like the facts about our dog, cricket and the Mughal ruler; those facts are not related in any way, and so have nothing to do with science. Science starts with observation (what we see, or hear, or know through the senses) but goes on to make comparisons (between that and this, between then and now) and to study the relationship or connection between the things which are compared. If, between this and that, or between then and now, there has been a change, then a scientist tries to find out the cause of the change, to find out why the change has occurred. Next, the scientist tests the explanation, to find out whether it is likely to be correct, whether it is probable; this testing is called Experiment. Then, from the observations and the explanations the scientist tries to 'predict', that is, to say what will happen if he has observed correctly and if his hypothesis, that is, his suggested explanation, is correct.

Let me give an example. I observe that our dog, Chippy, like papaya. I observe that she has a white tail. Our dog, Sheba, doesn't like papaya; her tail is brown. Our dog, Rags, doesn't like papaya; her tail is black. From all these observations, I get the idea (I form the hypothesis) that only dogs with white tails like papaya, that there is a connection between tail colour and the taste for papaya. Now to find out whether this hypothesis is true or false, I must get experimental evidence. I can do two things. First, I predict that, if my hypothesis is true, all dogs with
white tails will like papaya, and so I go round offering pieces of papaya to white-tailed dogs to see whether this is so. The second thing I can do is to offer papaya to a large number of dogs with coloured tail. If any white-tailed dogs dislike papaya, or if any dogs with coloured tails like it, I have failed to relate tail-colour with taste; my hypothesis has been disproved. In the history of science, for one hypothesis which is supported by experimental evidence, there are a hundred unsuccessful hypothesis. In fact, many of the great hypothesis of science has been the result of guess work. A scientific worker must always be ready to jettison a theory, to throw it away if it is useless, or to alter, to modify it so that it fits new facts. All theories are temporary; they seem, at the time they are made, to correspond with all the facts; subsequently, new observations are recorded and the theory is no longer retained.

So far I have written about theoretical science and about the way, the scientific method, of getting proof that a theory is in accordance with the facts, or that it is untrue. There is also the practical science, the science which has produced internal combustion engines, the electric telegraph, electric light, explosives; what is called applied science, the science of invention.

In one way, theoretical science, the science of men who are interested in the discovery of regular relationships between things and events, is like practical science, the science of men who do not wish to formulate theories but who wish to do things; both theoretical and practical science are based on observation and experiment. A theoretician uses
observation and experiment to formulate 'laws', that is, to find statements which truly describe what phenomena always occur under specific circumstances. An empirical scientist uses observation and experiment to make, or especially, to improve procedures for making things which he thinks are useful, or needed.

Many people think that the theoretical scientist is 'higher' than the practical man; and, of course, other people make fun of the arguments of theoretical scientists about things which have no practical importance.

There is often a connection between the two. The study of the stars, astronomy, seems at first sight to have no practical application. Yet the science of astronomy developed from the practical needs of people who crossed deserts and oceans, navigation uses astronomy to establish direction and position. Astronomy still performs the most practical services of setting standards of keeping time, and of the prediction of tides. The wish to know more about the universe has led to the development of telescopes; and the development of a practical industry, the making of optical instruments.

EXERCISES

A. Find words in the passage meaning:

(a) The study of life.

(b) The study of plants.

(c) The study of food.
(d) Standing alone.
(e) Connected.
(f) Right, exact.
(g) A suggested explanation.
(h) Facts which support a belief.
(i) To throw away.
(j) Lasting only a short time.
(k) To be in agreement with.
(l) To keep.
(m) In agreement with.
(n) To state.
(o) A method.

B. Find words in the passage meaning:
(a) The act of evolving.
(b) The act of distributing.
(c) The act of growing.
(d) The act of observing.
(e) That which explains (an ..... 
(f) Not successful.
(g) Not true.
(h) A material which explodes.

(i) Related to theory.

(j) A way of proceeding.

C. Find words in the passage beginning with:
   (a) bio- (life)       (b) hypo- (under)
   (c) morph- (Shape)   (d) dis- (not)
   (e) nutri- (nourish) (f) tempor- (time)
   (g) pre- (before)    (h) astro- (star)
   (i) tele- (far)

D. Find words in the passage ending in:
   (a) - logy
   (b) - ation
   (c) - ship
   (d) - ection
   (e) - graph
   (f) - ethical
   (g) - tician
   (h) - ical
   (i) - nomy
The compartments of body

Reading and Comprehension

The body has three compartments. The first of these consists of active tissue, which is also known as cell mass. This does most of the chemical work of the body.

The second compartment consists of supporting tissue. This is composed of bone minerals, extra-cellular proteins, and the internal environment, or the extra-cellular fluid in the blood and lymph.

The third compartment is the energy reserve. This consists of fat, which lies round the principal internal organs and in adipose tissue.

These compartments cannot be separated by physical dissection, but it is possible to measure them indirectly. This may be done using methods such as the dilution technique.

The size of each compartment varies according to the age, sex and health of the individual. In a healthy young man the total body weight is divided approximately: 55% cell mass, 30% supporting tissue, and 15% energy reserve. A healthy young woman has normally twice as much fat.

EXERCISES

A. Contextual reference

Write the following sentences in your notebook, and complete them after studying the reading passage:
Example

'This' in sentence 5 refers to the second compartment (supporting tissue).

(a) 'These' in sentence 2 refers to ........

(b) 'This' in sentence 3 refers to ......

(c) 'This' in sentence 7 refers to ..... 

B. Rephrasing

Rewrite the following sentences, replacing the words printed in italics with expressions from the reading passage which have the same meaning:

Example

Fat is located round the principal internal organs.

= Fat lies round the principal internal organs.

(lies: from sentence 7).

(a) In a healthy young man, approximately 55% of the total body weight consists of cell mass.

(b) The energy reserve consists of fat.

(c) The supporting tissue consists partly of the extra-cellular fluid in the blood and lymph.

(d) The compartments are not separable by physical dissection.
(e) *Supporting tissue* makes up about 30% of the total body weight.

(f) A young woman has *usually* twice as much fat as a young man.

C. Relationships between statements

Place the following expressions in the sentences indicated. Where necessary, replace and re-order the words in the sentences, and change the punctuation:

**Example**

however (8)

These compartments cannot be separated by physical dissection. It is, however, possible to measure them indirectly.

(a) i.e. (5) (d) For example (11)

(b) Of course (8) (e) as follows (11)

(c) for example (9) (f) however (12)

D. Use of Language

(a) The description of structure

Copy the cited below diagram into your notebook. Refer to the reading passage and complete the diagram by filling in the blanks.
(b) Write the following sentences in your notebook, using the completed diagram to finish them. Use the verb 'consist of'.

Example

The compartments of the body consist of active tissue, or cell mass, supporting tissue, and the energy reserve.

- Supporting tissue ..............
- The energy reserve ..............
- The internal environment ..............

(c) Write the sentences again, this time using the verb 'be composed of'.

Example

The compartments of the body are composed of active tissue, or cell mass, supporting tissue, and the energy reserve.
(d) Write the following sentences in your notebook, using the completed diagram to finish them. Use the verb ‘form’.

Example

Fat, which lies in adipose tissue and round the principal internal organs, forms the energy reserve.

- The extracellular fluid in the blood and lymph ...........
- Active tissue, supporting tissue, and the energy reserve ...........
- Bone minerals, extracellular proteins, and the internal environment ...........

(e) Write the sentences again, this time using the verb ‘make up’.

Example

The fat which lies in adipose tissue and round the principal internal organs makes up the energy reserve.

(ƒ) Write the following sentences in your notebook, using the diagram and the verbs consist of, be composed of, form and makeup.

- ............ consists of bone minerals, ........... .
- The extracellular fluid in ............ the internal environment.
- The energy reserve is ............ .
- Active tissue, ..........., and the energy reserve ............ .
- The internal environment consists of ............ .
- Bone minerals, ............... .
3.2 MATERIALS SUGGESTED FOR THE STUDENTS OF ARTS AND SOCIAL-SCIENCES

Following materials are provided for the learners of Arts and Social-Sciences groups to improve their use of English language:

TEXT NO. 1

Man

Man is an animal but he is a unique animal. It was Darwin who first clearly and scientifically defined the basis of man's connection with the animal kingdom, but it was Darwinism, too, which defined the conspicuous differences between man and other animals.

The most obvious basic characteristic which distinguishes Man from other animals is the faculty of speech, the ability to use appropriate verbal signs for objects. Animals can express a desire for food by means of cries, but man can convey the idea not only that he is hungry but also that he wants a banana or some rice. This ability indicates the possession of another faculty- that of recognising objects as belonging to a class.

The possession of the faculty of speech has certain conspicuous consequences, such as the accumulation of experience and the creation of traditions. Animals can teach their young to swim or to fly, but man by means of speech can also transmit concepts and experience, so that succeeding generations inherit not only physical characteristics but also traditions based on the cumulative experiences of their predecessors.
An important consequence of this is the improvement of skills and tools. The skills and tools employed by man to-day are more developed than those in use 500 years ago, but no changes in basic animal habits and skills have occurred in that same period of time.

Another unique property of man is his position of dominance in the natural world. In the long history of evolution, dominant types have risen and fallen, but only man has proved able to maintain his ascendancy and to increase it. While ants, the dominant insect group, have achieved amazing variability of type, man still comprises only one biological species. Within the species, however, there is an astonishing diversity, due to differences of upbringing profession and personal taste. Consider, for example, the differences between a subnormal member of a savage tribe and an Einstein. It is this diversity which makes conceivable the division of labour in human society.

The emergence of man through the process of evolution looks almost like an accident. From the earliest types of life various lines branched out. Some soon reached the limits of their evolution, but some on the other hand, because they were more capable of appropriate adjustment to their environment, or became to some extent independent of it, continued evolving and producing appropriate new types, until in their turn they reached their limits. An animal bigger than an elephant could not exist on the earth to-day; the limits of flight have been reached by the birds that we know.
The repetition types of pre-history evolved finally into two types-the birds, which represent the limit of one type, and the mammals, of which one type evolved into man.

The primitive ancestors of man comprised a group called the primates, to which monkeys and apes also belong. It was only in this group that the forelimbs became a hand to enable them to climb trees, and that the sense of sight became dominant over smell. The possession of these two important basic faculties of touching and seeing objects finally produced the ability to conceive and to convey thoughts and enabled man to establish his ascendancy.

Another aspect in which man is unique is in the period of post-maturity he enjoys. In the case of animals, there is little expectation of life after maturity, but in civilized man, the average expectation of life includes at least ten years after maturity. This means that in most societies, the cumulative experience and wisdom of older men and women is available to succeeding generations, who can make the adjustments necessary in changing circumstances.

EXERCISES

A Finds words in the passage meaning:

(a) Only one of its kind.

(b) Suitable, fitting.

(c) To transmit, send from one place to another.
(d) To receive something when a person dies.
(e) Those who have lived before.
(f) Process of gradual change.
(g) To continue to possess or to support.
(h) The capacity to change.
(i) Appearance.
(j) Modification, change.
(k) surroundings, circumstances.
(l) Animals which feed their young on their own milk.
(m) To consist of.
(n) Full growth.
(o) Can be obtained.

B. Find words in the passage meaning:
(a) The act of creating.
(b) One who has proceeded (a ......).
(c) The act of evolving.
(d) Related to biology.
(e) Below normal.
(f) Possible to conceive.
(g) The act of adjusting.
(h) The act of flying.
Religion

We cannot read very much European history, or I imagine, world history, without reading about religions.

Early civilizations were associated with particular religions, and when a civilized area was conquered, the gods of the vanquished people were assumed to have been conquered also, and the gods of the victorious people took their places.

Later on, men came to see that the gods of various areas resembled each other, as did the rites, or religious customs. When the Romans conquered other peoples they did not associate their victory with the victory of Roman gods over other gods, and so they allowed conquered
peoples to continue their own cults, or systems of religion. For the first time there was tolerance of other creeds, or beliefs, and other doctrines, or teaching about religion. An intelligent Roman tolerated all religions which were not detrimental, that is, harmful to the Roman state, and in the units of the Roman armies all cults were followed; moreover, a Roman thought it was reasonable to participate in any religious rite which was not completely alien to his concepts, or ideas, of religion, as by taking part in these rites the unity of the Empire was strengthened.

Most religions seem to have a large number of followers who are nominal followers, that is, they follow the edicts, or orders given by the religious leaders, but without great enthusiasm. They belong to the religion in name rather than in fact. Most religions also seem to have minorities of really genuine followers. Sometimes such people devote their lives to the practice of the cult. Sometimes they give their lives to propagating the religion, to making it widespread. A person whose enthusiasm to promote his religion makes him hate other religions is said to be a fanatic, and fanaticism has brought about much hatred and many wars.

Most religions have a creed or a set of beliefs which are generally accepted. The believers who accept this creed are called orthodox. In the history of religions we see that frequently there has been friction, or quarrelling, between the orthodox followers and the leaders of sects, or small groups, with different beliefs. Some religions have quite split up into groups with different names—different dominations, they are called. Often the orthodox believers have endeavoured to suppress unorthodoxy
by force, and sometimes after a violent upheaval, and a time of turmoil or confusion, a previous unorthodox standpoint has become a new orthodoxy; it has supplanted the previous orthodoxy, and then suppressed it in turn.

Often religious creeds, or beliefs, veer away from their original form, the ideas of the leaders change, new ideas appear and predominate over the minds of religious thinkers, the church or temple rites themselves change or new ecclesiastical rites are introduced and become prevalent over the old rites, new edicts are made and the old rules forgotten- in other words, the whole religion, beliefs and practices, is transformed, gradually altered, to become quite different. Then, after some time, a few people discover that the original beliefs have become altered or lost, and they attempt to bring the old form of the religion to life again, they endeavour to revive the first creeds and practices. They call on others to give up, or renounce, all the additions, they ask people to scrutinize or examine carefully the prevalent practices and to reject all that are unsound. Sometimes these attempts at a revival of an original form of a religion have had success.

A few men have seemed to be naturally pious, they have wanted to do what they have felt they ought to do, duty has been no struggle, and they have lived lives of tranquility or quiet. Such natural piety does not seem to have been common or typical of religious followers.
A person who holds to one creed without reason and without wanting to think is called a bigot; to him his own belief is truth and all other beliefs are superstitions.

EXERCISES

A. Find words in the passage meaning:

(a) To conquer, to defeat.

(b) To be similar to.

(c) A system of religion.

(d) To allow some thing to happen with which one does not agree.

(e) Able to do harm or damage.

(f) Foreign, not natural.

(g) An order, a command.

(h) A small group of people.

(i) To spread (an idea, a religion).

(j) A person filled with mistaken enthusiasm.

(k) Used to describe a person who accepts a belief.

(l) To take the place of.

(m) Belonging to, connected with, a church.
(n) To change, to alter.

(o) To refuse to accept.

B. Find words in the passage meaning:

(a) Related to Europe.  
(b) Having won a victory.

(c) Causing harm.  
(d) To give strength to.

(e) In name only.  
(f) The quality of a fanatic.

(g) That which is believed (a ....).

(h) The quality of bring orthodox.

(i) The result of reviving (a ....).

(j) The quality of being tranquil.

C. Find words in the passage beginning with:

(a) uni - (one)  
(b) ortho- (straight)

(c) un- (not)  
(d) ecclesia- (church)

(e) sub- (under)

D. Find words in the passage ending in:

(a) -al,  
(b) -able,  
(c) -asm,

(d) -ic,

(e) -icism,  
(f) -ox,  
(g) -oxy,

(h) -ot.
TEXT NO. III

Democracy

Perhaps the most famous definition of democracy is that of Abraham Lincoln who defined it as government 'of the people, by the people, for the people', stressing the word 'people'. The word itself is derived from the Greek 'demos', meaning the people. The word 'people' may mean various things; it may mean all people, including rich and poor, or it may mean a large sector of the majority of the people, probably the manual workers. The Greek philosopher, Aristotle, distinguished between two concepts of democracy; the true form in which all governed in the interest of all; and the wrong form in which the masses governed in their own interest. Today we should accept as a definition (notice the stress on the world 'all') government of all the people (that is to say, all are subject to the decisions of the government) by all the people (all are responsible for electing the government) for all the people (the government rules in the interest of all and not in the communal interest of a section of the population). It may happen that a dominant majority in power rules in its own interest.

The development of the structure of democracy in history is from what are called 'primary' forms to representative forms. A primary democracy is one in which the people govern themselves- directly by decisions taken in an assembly attended by all. This sort of democracy is obviously conceivable only in small states. The structure of democracy in large states must be different, since such policy-making assemblies are not possible, the solution lying in a system of election of
representatives of the people to perform the business of government. Parliamentary democracy, found in many countries to-day, is of the later type. Primary democracies existed in Greek and Roman times and were characteristic of the medieval city states of, for example, Italy.

Since all the people in a democracy do not share the same doctrines, political parties, reflecting these differences of opinion, are formed and try to win the support of the people in the hope of being elected to parliament. In theory this should mean that all political opinions are reflected in the decisions of the government. In fact, of course, government by the people means government by the majority and decisions taken by Parliament are not often unanimous. But at least since other political doctrines are represented in Parliament, the people enjoy freedom of discussion and freedom of choice, two definite features of parliamentary democracy. Parliament under this system is the custodian of the freedom and rights of the people.

Democracy is a method of government, concerned with the management of politics; it is not a way of managing economics and the social life of a people. Within a democracy, economic policy can be either capitalistic or socialistic.

EXERCISES

A. Find words in the passage which mean:

(a) A statement of the meaning of a word.
(b) To emphasise, to give importance to.
(c) Used to describe workers who use their hands.

(d) A gathering of people.

(e) To carry out.

(f) To hold back.

(g) Reputation, good name.

(h) A belief.

(i) A large group.

(j) Accepted by everybody.

(k) A protector or defender.

B. Find words in the passage meaning:

(a) The result of defining.

(b) One who teaches or practises philosophy.

(c) Related to a community.

(d) The act of developing.

(e) The result of deciding.

(f) Related to parliament.

(g) The act of electing.

(h) Not perfect.

(i) The state of being free.

(j) Related to society.

C. Find words in the passage beginning with: 
D. Find words in the passage ending in:

(a) -acy, (b) -ility, (c) -er, (d) -an,
(e) -ible, (f) -ous, (g) -ary, (h) -ics
(i) -ness, (j) -istic

TEXT NO. IV

The nature, object and purpose of History

I shall therefore propound answers to my four questions. Such as I think any present-day historian would accept. Here they will be rough and ready answers, but they will serve for a provisional definition of our subject-matter and they will be defended and elaborated as the argument proceeds.

(a) What is history? Every historian would agree, I think, that history is a kind of research or inquiry. What kind of inquiry it is I do not yet ask. The point is that generically it belongs to what we call the sciences: that is, the forms of thought whereby we ask questions
and try to answer them. Science in general, it is important to realize, does not consist in collecting what we already know and arranging it in this or that kind of pattern. It consists in fastening upon something we do not know, and try to discover it. Playing patience with things we already know may be a useful means towards this end, but it is not the end itself. It is at best only the means. It is scientifically valuable only in so far as the new arrangement gives us the answer to a question we have already decided to ask. That is why all science begins from the knowledge of our own ignorance: not our ignorance of everything, but our ignorance of some definite thing- the origin of parliament, the cause of cancer, the chemical composition of the sun, the way to make a pump work without muscular exertion on the part of a man or a horse or some other docile animal. Science is finding things out; and in that sense history is science.

(b) What is the object of history? One science differs from another in that it find out things of a different kind. What kinds of things does history find out? I answer, res gestae: actions of human beings that have been done in the past. Although this answer raises all kinds of further questions many of which are controversial, still, however, they may be answered, the answers do not discredit the proposition that history is the science of res gestae, the attempt to answer questions about human actions done in the past.
How does history proceed? History proceeds by the interpretation of evidence: Where evidence is a collective name for things which singly are called documents, and a document is a thing existing here and now, of such a kind that the historian, by thinking about it, can get answers to the questions he asks about past events. Here again there are plenty of difficult questions to ask as to what the characteristics of evidence are and how it is interpreted. But there is no need for us to raise them at this stage. However they are answered, historians will agree that historical procedure, or method, consists essentially of interpreting evidence.

Lastly, what is history for? This is perhaps a harder question than the others; a man who answers it will have to reflect rather more widely than a man who answers the three we have answered already. He must reflect not only on historical thinking but on other things as well, because to say that something is 'for' something implies a distinction between A and B, where A is good for something and B is that for which something is good. But I will suggest an answer, and express the opinion that no historian would reject it, although the further questions to which it gives rise are numerous and difficult.

My answer is that history is 'for' human self-knowledge. It is generally thought to be of importance to man that he should know himself: where knowing himself means knowing not his merely personal peculiarities, the things that distinguish him from other men, but his nature as man.
Knowing yourself means knowing, first, what it is to be a man; secondly, knowing what it is to be the kind of man you are; and thirdly, knowing what it is to be the man you are and nobody else is. Knowing yourself means knowing what you can do; and science nobody knows what he can do until he tries, the only clue to what man can do it what man has done. The value of history, then, is that it teaches us what man has done and thus what man is.

EXERCISES

A. Using the information given in the test, complete the following sentences, making sure that each completed sentence is grammatically correct as a whole:

(a) Science is concerned with _______.

(b) History can be regarded as a science because _______.

(c) The object of history is _______.

(d) Historians get answers to the questions they ask about past events by _______.

(e) Human self-knowledge means _______.

(f) History contributes to human self-knowledge by _______.

B. Fill in the gaps with what, which, or that, as required, or (where this is possible) leave them blank.
(a) Generically history belongs to ______ we call the sciences.

(b) Rearranging facts is only useful in so far as the new arrangement gives us the answer to a question ______ we have already decided to ask.

(c) History is concerned with the actions of human beings ______ have been done in the past.

(d) By studying documents the historian can get answers to the questions ______ he asks about past events.

(e) Knowing yourself means knowing, first ______ it is to be a man; secondly, knowing ______ it is to be the kind of man ______ you are; and thirdly, knowing what it is to be the kind of man ______ you are and ______ nobody else is.

C. Fill in the gaps in the following sentences with suitable propositions:

(a) Science does not consist ______ collecting what we already know and arranging it in this or that kind of pattern. It consists ______ fastening upon something we do not know and trying to discover it.

(b) Historical method consists essentially ______ interpreting evidence.

(c) All science begins ______ the knowledge of our own ignorance.

(d) This text begins ______ a short introductory paragraph.
(e) The author begins ______ asking four questions.

(f) He was annoyed at the delay as he was in a hurry to proceed ______ his journey.

(g) How does history proceed? History proceeds ______ the interpretation of evidence.

(h) Having dealt with the simpler elements in the problem, the lecturer proceeded ______ a discussion of the more complex ones.

(i) The speaker was continually interrupted by members of the audience who disagreed with him, but in spite of this he proceeded ______ his speech, even though many of his remarks were completely inaudible.

D. Notice the use of the construction with in that (line 28) and compare the following two sentences; One science differs from another in character. (noun)

One science differs from another in that it finds out things of a different kind. (clause)

Then complete each of the following sentences in two ways: with a noun and with a clause.

(a) Dogs differ from cats in ________.

(b) Historians resemble scientists in ________.
(c) The United Nations resembles the former league of Nations in —

(d) A federal constitution differs from a unitary one in ————.

E. Notice the use of in so far as (line 17). Then complete the following sentences:

(a) The author is primarily concerned with social history, and he proposes to deal with political events only in so far as ————.

(b) Television is useful in so far as ————.

(c) This law limits the freedom of the press, but only in so far as ————.

F. Give the nouns that are related to the following verbs:

(a) Propound, Propose, Expound, Expose, Elaborate, Imply, comply.

(b) Give the verbs that correspond to the following nouns:

Ignorance, Exertion, Distinction.

G. Rewrite the following sentences, using single words instead of the words underlined, and making any other change that may be necessary:

(a) The definition that the author gives is not final, but only one that will serve for the time being.
(b) After the war many houses were erected that were not intended to be permanent, in order to provide homes for those whose houses had been destroyed.

(c) So far as classification is concerned, history belongs to what we call the sciences.

(d) That is a question about which many conflicting views can be expressed.

(e) That is an argument that can not be proved wrong.

(f) It is difficult to understand why he says at some times that he believes in God, and at others that he is an atheist, as these two statements are ones that contradict each other.

(g) The starting-point of science is an understand of our own lack of knowledge.

H. Take the author's four questions, but substitute for history some other branch of knowledge. Then write answers to these questions, using the text as a model.

TEXT NO. V

Scientific method in the Social-Sciences

Even the social scientist who is occupied with the study of what are called institutions must draw his ultimate data (with one important exception mentioned below) from the experience of the senses. Suppose,
for instance, that he is engaged on a study of the role of trade unions in contemporary England. The abstract conception 'trade union' is simply a shorthand for certain types of behaviour by certain people, of which we can only be aware by sensory perception. It means men sitting in a room and making certain sounds in the conduct of a 'trade union meeting', or handing over to other persons tangible objects (money) as their subscriptions to the union. Anyone who wishes to make a study of trade unions, or even of the more abstract conception 'trade unionism', can only do so by personally observing such behaviour, or by using his eyes and ears on books and speeches made by other people who have themselves made such observations (or who have in their turn heard or seen records of such observations made by others). Even such comments on a union meeting as that it was 'orderly' or 'peaceful' are fundamentally statements about its physical properties: an orderly meeting is presumably one in which people do not make noises by banging upon the table or speaking very loudly.

This dependence of social studies upon sense perception is certainly a wholesome reminder of the fundamental homogeneity of the original data of science. For knowledge of the external world, whether of things or of people, we continually come back to our five senses in the end. Nevertheless, if a great mass of data relevant to social science is sensory, we have, I think, also to admit an important collection that is not-namely the whole body of primary mental or psychological experience. Perception of mental pleasure and pain appears to have the same universality as
sensory experience. At all levels of culture, sensations of simple happiness and unhappiness are as general as are the experiences of seeing and hearing. It is of course true that no person can experience the feelings of anyone other than himself; but equally no one can see with another's eyes or hear with another's ears. The grounds for belief in the sense experiences of other people and the grounds for belief in their primitive psychological experiences are thus both equally shaky, or equally firm. We derive our conviction that other people experience emotion from the fact that they say so, and from analogies between their behaviour and our own: we derive our conviction that they see and hear from exactly the same evidence.

The irresistibility of psychological experience is perhaps slightly more disputable. It one's eyes are open and one looks in a certain quarter one cannot help seeing. Is it equally true that one cannot help a feeling of pleasure or pain or shock or excitement? Essentially, I should say that it is. But it is clear that primitive emotional reactions can be inhibited; one can, for example, contrive not to be depressed by an event. Nevertheless, if we stand back from all philosophical niceties and ask ourselves whether psychological sensation ought to be omitted from the data of the social sciences on the ground that it is doubtfully 'primitive', there can not, I think, be much doubt about the answer. We must conclude with Bertrand Russell 'that there is knowledge of private data, and there is no reason why there should not be a science of them'. Equally, if we consider whether the similarities or the differences, in this matter of universality-
plus-irresistibility, between psychological and sensory experience are the more impressive, we are surely bound to come down on the side of the similarities. Certainly, social studies which consistently ignored human feelings would be worse than laughable.

EXERCISES

A. Answer the following questions, using the information given in the text:

(a) From what does the social scientist concerned with institutions derive most of his ultimate data?

(b) What important data relevant to social science are not derived from this source?

(c) What have sensory perception and perception of mental pleasure or pair in common with each other.

(d) What is the author’s opinion of the relative importance of the similarities and of the differences between sensory perception and perception of mental pleasure or pain?

B. Explain the following points:

(a) The logical relation between the first sentence of the passage and the rest of paragraph 1.

(b) The logical relation of paragraph 2 to paragraph 1.

(c) The logical relation of paragraph 3 to paragraph 1 and 2.
C. In which of the following sentences should the gaps be filled in with the, and in which should they be left blank?

(a) The trade unions were dissatisfied with working conditions in a certain shop, and this was ——— more serious as the store was patronized chiefly by the working class.

(b) Some of the refugees were found to be suffering from minor ailments, but one had pneumonia and this was ——— more serious.

(c) If we ask whether the similarities or the differences between these two things are ——— more impressive, there can be little doubt about the answers.

(d) The house we are living in now is larger than the one we had before, but the old one was ——— more comfortable.

(e) Of these two problems, the second is ——— easier to solve.

(f) An exceptionally heavy fall of snow disorganized the transport system, and the confusion was ——— greater because the breakdown happened just when people were returning home from their work.

D. Fill in the gaps in the following sentences with some or certain, as required:

(a) The abstract conception 'Trade Union' is simply a shorthand for ——— types of behaviour by ——— people.
(b) This book contains ———— important information which will probably be useful to you in your work.

(c) There are ———— apples in that basket.

(d) Those who drew up the constitution felt that ———— rights required special safeguards, and that ———— types of law should not be passed at all.

E. Fill in the gaps with at last, in the end, or finally, as required:

(a) For knowledge of the external world we continually come back to our five senses ————.

(b) We waited for them for nearly an hour and ———— they came.

(c) In his essay the author deals first with the facts about the increase in world population, then with its causes, and ———— explains its implications for the future.

(d) At the beginning of the match the football team seemed to be losing, but they won ————.

F. Explain the meanings of the words underlined as they occur in each of the following sentences you may not always be able to give simply a synonym for the word underlined, but will need to explain the part of the sentence in which the word occurs.

(a) The word 'diplomacy' is used in several different senses.

(b) The social scientist must draw his ultimate data from the evidence of the senses.
(c) He didn't have the **sense** to close the windows before going out, although it was obvious that there was going to be a thunderstorm.

(d) The meeting was **conducted** in an orderly manner.

(e) Some substances **conduct** heat better than others.

(f) The guide **conducted** a party of tourists round the city.

(g) If we say that a meeting was orderly we are making a statement about its physical **properties**.

(h) This piece of land is national **property**.

(i) You will not make him change his mind easily, as he has very strong **convictions**.

(j) He seems to be a bad character; he has had five previous **convictions**.

(k) It is clear that primitive emotional **reactions** can be inhibited.

(l) Peter the Great condemned his son to death on the ground that he was the leader of **reaction**.

G. Give the adjectives relating to **sense** in b and c (above); the abstract nouns relating to **conduct** in d and e; the verbs relating to **conviction** in i and j.

H. Summarize the essential points of the text in a paragraph of about 200 words.
Two roads diverged in a yellow wood,
And sorry I could not travel both
And be one traveler, long I stood
And looked down one as far as I could
To where it bent in the undergrowth;
Then took the other, as just as fair,
And having perhaps the better claim,
Because it was grassy and wanted wear;
Though as for that the passing there
Had worn them really about the same,
And both that morning equally lay
In leaves no step had trodden black.
Oh, I kept the first for another day!
Yet knowing how way leads on to way,
I doubted if I should ever come back.
I shall be telling this with a sigh
Some where ages and ages hence:
Two roads diverged in a wood, and I-
I took the one less traveled by,
And that has made all the difference.
A. Read the poem then write an essay in which you use a paraphrase of this poem as a springboard for your thoughts on a fork in the road of your life—a decision that made a big difference for you.

**TEXT NO. VII**

**Richard Cory**

Edwin Arlington Robinson

Whenever Richard Cory went down town,
We people on the pavement looked at him:
He was a gentleman from sole to crown,
Clean favored, and imperially slim.

And he was always quietly arrayed,
And he was always human when he talked;
But still he fluttered pulses when he said,
"God morning", and he glittered when he walked.

And he was rich—yes, richer than a king—
And admirably schooled in every grace:
In fine, we thought that he was everything
To make us wish that we were in his place.

So on we worked, and waited for the light,
And went without the meat, and cursed the bread;
And Richard Cory, one calm summer night,
Went home and put a bullet through his head.
COMPREHENSION

A. Read the poem. Have you known and envied someone similar to Richard Cory, someone whom everyone else thought had it all? What happened to him or her? Did you discover that your impression of this individual was wrong? Write a personal response essay in which you compare and contrast the person you knew with Richard Cory. This assignment requires you to analyze the poem as well as draw on your own experience and knowledge.

TEXT NO. VIII

Teaching a poem: written in March

William wordsworth

8. The cock is crowing,
The stream is flowing,
The small birds twitter,
The lake doth glitter,
The green fields sleep in the sun; The oldest and youngest,
Are at work with the strongest;
The cattle are grazing,
Their heads never raising-
There are forty feeding like one:

Like an army defeated,
The snow hath retreated,
And now doth fare ill,
On the top of the bare hill;
The plough-boy is whooping anon-anon;
There's joy in the mountains,
There's life in the fountains;
Small clouds are sailing,
Blue sky prevailing-
The rain is over and gone.

COMPREHENSION
A. Answer the following questions:
(a) How many seasons are there? Name them.
(b) When do we have spring?
(c) Have you read any poem about spring.
(d) What different things does the poet notice?
(e) Why does he notice these things?
(f) What does the poet mean when he says, "The oldest and youngest are at work with the strongest"?
(g) Why does the poet specially mention the grazing cattle?
(h) Do you think the poet actually counted the cattle?
(i) What is the snow compared to?
(j) What battle has the snow lost?
(k) What does the poet say about the mountains and the fountain?
(l) Why does the poet refer to the rain which is "over and gone"?
TEXT NO. IX

Stopping by woods on a snowy evening

Robert Frost

Whose woods these are I think I know,
His house is in the village though;
He will not see me stopping here.
To watch his woods fill up with snow.
My little horse must think it queer
To stop without a farmhouse near
Between the woods and frozen lake
The darkest evening of the year.

He gives his harness bells a shake
To ask if there is some mistake.
The only other sound's the sweep,
Of easy wind and downy flake.
The woods are lovely, dark and deep,
But I have promises to keep,
And miles to go before I sleep,
And miles to go before I sleep.

COMPREHENSION

A. Answer the following questions:

(a) How is the weather in the forest?
(b) Why does the rider stop near the woods?
(c) Does the owner of the woods live there?
(d) Who is the rider's companion when he stops by the woods?
(e) Why is the horse surprised?
(f) At what time did the rider stop by the woods?
(g) Why does the horse shake its bells?
(h) What does 'downy flake' mean?
(i) Why cannot the rider stop longer than he does?
(j) What is the significance of the repetition of the last two lines?
(k) What do the words 'promise' and 'miles' signify?
(l) What lesson do you learn from this poem?

3.3 MATERIALS SUGGESTED FOR THE STUDENTS OF COMMERCE

Following materials can be used by the students of commerce to improve their English:

TEXT NO. I
Bank Organization

Look through the following short report concerning the reorganization of a bank.

The Bank of India is reorganizing its operations into three business sectors: corporate banking and international banking operations will be headed by Rakesh Kumar, who is currently Director of International Banking operations and Deputy General Manager; the finance operations sector, including foreign exchange operations, short-term money market operations and accounting, will be headed by Ajay Singh, while Amitabh has been named Deputy General Manager with responsibility for the branch network and retail banking sector.
EXERCISES

A. In the boxes below each name, fill in the division for which each person will be responsible. Beneath the boxes add any details which are given about the responsibilities of the divisions.

(a) Rakesh Kumar  (b) Ajay Singh

(c) Amitabh

B. Look at the words in the left-hand column, which are taken from the text. Match them with words from the right-hand columns.

- Operations (a) Reports (g) Led
- Sectors (b) At present (h) Offices
- Headed (c) Activities (i) Areas
- Currently (d) Sales
- Including (e) Covering
- Named (g) Appointed

C. Make a short presentation of a bank or company. Look through the list of points below and decide in which order you will use them in your presentation. Then compare your order with that of a partner and discuss any differences.

- Range of services
- Financial performance
- Structure
- Specialized products
- Geographical representation
TEXT NO. II

The Reception

At the reception desk

The client has reserved in advance

Employee : Good afternoon. May I help you?

Client : Yes. We have a booking for tonight. The name is Zeenat.

Employee : Just a moment, please.

(Employee checks the board)

Employee : Yes, that was a double room with bath.

Client : Yes, That's right.

Employee : Would you like to fill in this form, please?

(Client fills in form)

How are you going to pay, Madam? In cash or by credit card?

Client : In cash.

Employee : Have you got any means of identification?

(Client hands over his passport and the employee checks it)

Thank you, Sir.
(Employee gives back passport and hands the client her key card and the keys to the room)

Here's your key card and your key. Your room number is 306. The porter will show you to your room (Porter comes over)

Have a nice evening, Madam.

Client : Thank you.

EXERCISES

A  Fill in the blanks

Employee: ________ afternoon, May I help you?

Client: Yes. we have a _________ for tonight.  

The name is Zeenat.

Employee: ________ a moment, please.  

...  

That was a double _________ bath.

Client: Yes, _________ right.

Employee: Would you like to _________, please?  

How are you _________ to _________, madam?  

In cash or by credit _________ ?

Client: In cash.

Employee: Have you got any means of _________ , please?  

...
you, Sir.

...

your card and your .

Your room is 306. The porter will show you . Have a evening, Madam.

Client: Thank you.

B. Role Playing

Client:

(a) You'd like a single room for this evening. You have no reservation.

(b) You and your friend decide to stay one more night. If it's not possible, you'll leave today. You'd like to leave your luggage in your room till 6:00 this evening, as you want to do some shopping.

B. Hotel employee:

(a) It's 9:30 in the evening. You can let the client have a room. Give the client his key card and key. The room is number 204. The porter will show them up.

(b) It's the morning. The hotel's full tonight. The porter can look after a client's luggage.

C. Getting information from the client about a reservation

- Do you have a letter or telex confirming the reservation?

- When did you make the reservation?
- When was it made?
- From which country?
- Who made the reservation (it)?
- I'm sorry, but I haven't got any record of that.
- Would you like me to get you a room in another hotel?
- Would you like me to call another hotel?
- I found a room at ....

TEXT NO. III

The cashier in the Hotel

The client pays with a credit card

Cashier: Good morning, sir, May I help you?

Client: I'd like to check out now. My name is Mr. Parvez and I was in room 420.

Cashier: Just a moment, please, Sir.

... Did you make any phone calls from your room?

Client: Yes.

Cashier: How many did you make?

Client: I don't know exactly.

Cashier: Just a moment, I'll have to check with the operator.

... Here you are, sir.
(Gives client the bill)

Client: I don't understand. What is this for?

(Points to a number)

Cashier: That's for the drinks you ordered from your room.

Client: Do you take credit cards?

Cashier: What kind is it?

Client: Indian Express.

Cashier: Yes we do, but since the amount exceeds Rs. 10,000, I'll have to ask for the approval code. Just a moment, please.

(Client gives cashier credit card)

...

Can you sign here, please?

EXERCISES

A Complete the following dialogue:

Cashier: Good morning, ________ . May I ________ you?

Client: I'd ________ to check ________ now. My name is Mr. Parvez and I was ________ room 420.

Cashier: Just a moment, please sir.

...

Did you make any ________ from your room?

Client: Yes.

Cashier: ________ ________ did you make?
Client: I don't know ________.

Cashier: Just a moment, I'll have to ________ with the operator.

... 

Here you are, sir.

...

Client: I don't ________ what's this ________?

Cashier: That's for the drinks you ________ from your room.

Client: Do you ________ ________ cards?

Cashier: What ________ is ________?

Client: Indian Express.

Cashier: Yes, we do, but ________ the ________ exceeds Rs. 10,000, I'll have to ask for the ________ ________.

Just a moment please.

...

Can you ________ here, please?

B. Role playing

(a) Presenting the bill to the client:

- Did you have breakfast this morning?

- Did you make any phone calls from your room?

- How many phone calls did you make?

- That 'll be ...

- The total amount is ...

- Here's your bill. Would you like to check it?
Would you like to check and see if the amount is correct.

We had to charge you for ..... 

That's for the phone calls you made.

That's for the ... you ordered from your room.

Here's your receipt.

(b) Cheques and credit cards:

What kind is it?

Have you got a bank card?

I'm sorry, we don't accept personal cheques. It's the policy of the hotel.

Yes, we do, but since the amount exceeds ... I'll have to get the approval code.

Yes, but you'll have to give me your name and address.

You'll have to show me your passport or some other form of identification.

TEXT NO. IV

Private and quoted companies are similar in one way: both have shareholders who own a part of the business. However, a private company cannot invite the general public to buy its shares and its shareholders cannot sell their shares unless the other members agree.

Anyone can buy the shares of a quoted company. They are freely bought and sold in a special market- the stock exchange. When a
company wishes to be quoted, it applies to the stock exchange for a quotation, which is a statement of the share price. If the application is successful, the stock exchange deals in its shares and publishes their price each day.

There are three main reasons why companies obtain a quotation. First, many companies need to raise money to expend their business. For example, they want to build a bigger factory or produce new range of goods. To finance this, they could try to get the money from a bank. But perhaps they have already borrowed heavily, so they do not want to increase their dept.

Secondly, there are companies which have been build up by their owners over the years. As the owner gets older, he does not want all his money to be tied up in the business. Therefore, he sells part of the company to the public.

Finally, there is the type of business which started many years ago. It has now become a large company and its shares are spread among various members of a family. Some may have no interest in the company, while others have different ideas about how to run it. Shareholders disagree strongly, so it becomes difficult to run the company properly. In such a case, the only solution may be to obtain a quotation on the stock exchange.

There is one reason why the owners of a company may not wish to obtain a quotation. If the directors are the only share-holders or have very large shareholdings- in their company, they may be getting substantial benefits from it. For example, the business may own things like the directors' houses, their cars and even their wives'
cars. It pays perhaps for their petrol and holidays, which are business expenses. In this case, it may be better not to become a quoted company.

**COMPREHENSION**

A Answer the following questions:

- What is the main difference between a private and quoted company?
- How does a company obtain a stock exchange quotation?
- Why do some companies prefer not to ask the bank to finance their expansion?
- What problem can arise if several members of a family have shareholdings in a company?
- Some directors do not want their companies to obtain a stock exchange quotation. Why?

B Oral Work

**Preparation:** Opinions: asking for and giving opinions.

Three directors of Johnson & Johnson Ltd. are discussing the financial situation of their company. Mr. Rashid is the firm chairman; his brother Faiq, Managing Director; Seema, Faiq’s wife, is company secretary. Read to the dialogue.

Rashid: In my opinion, things are looking very bad for us. Our turnover has gone up again this year but profits have dropped. What do you think, Faiq?
Faiq: I agree with you, Rashid, the situation's serious. In the last two years, our sales have increased, but profits have fallen-by more than 20% actually. I must say, I'm worried. How do you feel about it, Seema?

Seema: I'm not happy either, frankly. If you ask me, we can't expend any more in India. The market is saturated.

Rashid: May be you're right. We increased our market share by only 1% last year.

Seema: Yes, and our costs went up by almost 25%. We spent a fortune on advertising and sales promotion.

Faiq: That's because there's so much competition now. We are competing against big, low-cost Asian manufacturers. Each year, we have to cut our profit margins to keep up sales.

Rashid: You're right. These firms are really efficient. They have more modern machinery than us, and bigger markets, of course.

Seema: And they offer a wide range of products. Their styles are different, exciting ... what on earth are we going to do about it?

Faiq: Look, I've thought carefully about our problems. One or two ideas have come to my mind. Let me tell you about them, then you can give me your views.

(a) Practise these expressions

To give your opinion:
Examples:

In my opinion, we used to increase our product range.

I think (that) we should ask the bank for an overdraft.

If you ask me, our machinery out-of-date. In my view, this is not the time to apply for a quotation.

(b) To ask for an opinion:

Examples:

What do you think?

What's your opinion/view?

How do you feel about this?

(c) Useful expressions for agreeing/disagreeing:

yes, I agree with you.

yes, you're right.

yes, I agree with you (entirely).

No, I don't agree (at all).

No, that's not true.

I disagree with you entirely

I'm afraid I agree with you (more polite).

(c) Work is small group:

Using the discussions topics given below, practise giving your opinion and asking other members of the group for theirs.
(a) To be successful in business, you must not be too honest.

(b) A son/daughter should not work in his/her father's business.

D. Topics for discussion:

(a) Ajay and Amit have family business. What are the advantages and disadvantages of this type of business organization?

(b) You have two friends. One wants to start a business in your country; the other wants to buy shares in a company. What kind of business and which company do you recommend? Why?

E. Writing exercise:

Suppose, you are the sales manager of Godrej Company. You receive a letter of complaint from Mrs. Dixit. Reply to her letter, apologizing for the problem she has had with your products. Then tell her what the company will do to help.

**TEXT NO. V**

**Memorandum**

From: The managing Director  
To: Divisional Personnel Manager

Subject: Clocking-in Machines  
Date: 28/08/2001

There have been a number of comments about the amount of time being wasted with extended lunch breaks in our company. I do not want to sound as though I am against breaks, in principle; indeed our personnel consultants have emphasized how important and efficiency - promoting such regular interruptions can be if you want an effective and motivated office staff. But, we must keep a check on working hours and clocking-in machines for office staff do exist.
We can expect a little opposition to the idea if we are not careful. You can never be sure how the office staff will react. They might well take it badly. In any case, we're thinking of putting in clocking-in machines for all clerical grades; please send me a report.

EXERCISES

A Look at this report and send your imaginative MD a report.

B Work in pairs:

Read this memo and imagine that you are a Divisional personnel Manager to whom the memo is addressed. Then discuss these questions:

(a) What do you think the Managing Director's aims were in writing the memo?

(b) What-if anything-are you expected to do as a result of reading the memo?

TEXT NO. VI

Workers come and go as they please. They make vital decisions previously made by the bosses. Secretaries have been abolished (and given more rewarding jobs). The assembly line has been abandoned, as have economies of scale like buying components in bulk. A quarter of employees fix their own salaries and soon everyone will. The workers decide how much of the profits to share and how much to invest. Many of the rest are encouraged to work from home or setup their own small companies. Employees reorganize their factories and choose new sites for development.
Central computers have been consigned to oblivion along with rows of unnecessary filing cabinets. Memos must be confined to one page. There are no controls over expenses or business travel. There is a reception desk, but no receptionist. The boss doesn't even have his own desk and has to make his own tea.

The company, Semco, located in sao Paulo, Brazil, makes pumps, dishwashers and cooling units. It has been crawled over by the media and hundreds of curious corporations including 150 of the fortune top 500 companies in the US. Semeo has increased profits fivefold to nearly $3 million on sales approaching $30 million (after allowing for inflation despite the hyper-inflationary background of the national economy). It exports 23 percent of output. Productivity has risen sevenfold and the company is free of debt.

EXERCISES

A. Work in pair:

Read these extracts from an article about a Brazilian company and choose one of these titles for it.

- The world's most unusual work place.
- Reorganising factory work.
- Different types of company organization.
- Workers' control can work.

B. Find the answers to the following questions in the first extract:

- Who makes the decisions?
- What things have been abandoned?
- How are salaries decided?
- How are profits shared?
- Who reorganizes the factories?
- Who chooses new sites for development?
- What role do computers play in the factory?
- Who controls expenses and business travel?
- Who makes the boss's tea?

C. Find the answers to the following questions in the second extract:

- Where is semco located?
- What products does the company make?
- How have the profits of Semco developed recently?
- What is the sales situation?
- What happens to its output?
- How would you describe semco's financial situation?

**TEXT NO. VII**

We need paper for writing, typewriting and printing. Paper is one of the most important articles in everyday life. But man did not invent paper. The wasps cut wood from trees and chews it into a fine pulp from which they make gray walls of their nests. These walls are like paper and this must have given man the idea of making paper.
Thousand of years ago, the people of Egypt make paper from the papyrus plants which grew by the side of river Nile. Papyrus was made in long rolls, books written on it were kept rolled up. From the word ‘papyrus’ we got the word ‘paper’. Other materials like clay tables-shinks of animals, silk and soft wood were also used for writing, but paper became the most popular material for writing.

The Chinese made paper by beating lines or wood to a fine pulp with water and drying it in layers. But they kept it secret. The Arabs learnt it from the Chinese and slowly the secret was known to the west.

Today, the finest paper is made from rags of cotton or lines. Paper is also made from experto grass, straw, sugar canewaste (bagesse), just and bamboo. But wood pulp remains the most commonly used raw material.

EXERCISES

A. Complete the following set of notes of the passage:

(a) Importance of ________________________

(b) Why is paper important?

(c) Who invented paper?

(d) Traditional manufacturers of paper Egyptians; ________, ________, ________.

(e) Other materials used for writing. Give three usage.

(f) Write the name of materials used today for making papers.
B. Answer the following questions:

(a) When do you need to take notes?

(b) Why do you think you need to take notes?

C. Write a summary of the passage.

TEXT NO. VIII

Over the DECADES, the name of Siemens has become synonymous with progress. Since 1847, when Warner Siemens and Johann Georg Halske founded the Siemens and Halske Telegraph construction company in Berlin, the history of Siemens has been closely linked with the development of electrical engineering. While still a fledgling firm, Siemens and Halske spearheaded the evolution of telegraphy with the first pointer telegraph and the construction of an extensive telegraph network. In 1866 Werner Siemens invented the dynamo machine, laying the corner stone of power engineering.

New ideas are an old tradition of Siemens. The company that grew out of the original Siemens & Halske is today a highly innovative leader in the world electrical and electronics market. Composed of Siemens AG and an array of domestic and foreign subsidiaries, the contemporary Siemens organization continues to set milestones on the road of progress.

Siemens maintains its own production facilities in more than 50 countries and operates a world wide sales network. With more than 300,000 employees, it is one of the largest companies in the world electrical / electronics industry, having recorded annual sales of DN
82 billion in the 1992/93 fiscal year. Reliable and farsighted management is united with the youthful dynamism and zest for innovation that typify the company.

EXERCISES

A. Complete the following table with information from the article:

<table>
<thead>
<tr>
<th>Location of the company's activities</th>
<th>SIEMENS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activities of the company up to 1940</td>
<td></td>
</tr>
<tr>
<td>Recent activity of the company</td>
<td></td>
</tr>
</tbody>
</table>

B. Work in pairs

Imagine that you work in a company's publicity office or public relations department. An American company has written asking for some information about your company. Draft a short letter briefly summarizing the background, history and experience of your company.

(a) Begin your letter like this:

Dear .....  

You asked for some information about our company.
(b) Try to answer some of these questions in the main body of the letter:

- What area or areas does the company work in?
- When did the company start?
- What products does the company manufacture?
- What recent activities of the company are worth mentioning?
- Where is the company located?
- How is the company structured?
- How many people are there on the workforce?
- How do you see the future of the company developing?
- Has much changed in the company in the past?

C. Finish your letter like this:

If you have any further questions, please get in touch with me.

Yours sincerely,

TEXT NO. IX

The Restaurant

A. Taking a reservation by phone

Employee: Restaurant, may I help you?

Caller: What time do you open this evening?

Employee: At 7.00, Sir. And we close at midnight.

Caller: I'd like to reserve a table for two, please.

Employee: For what time, sir?
Caller: Around 8.15.

Employee: May I have your name, please, sir?

Caller: Sumit.

Employee: A table for two for this evening at 8.15 for Mr. Sumit.

Caller: That's right.

Employee: Thank you, sir.

Caller: Thank you, Good-bye.

EXERCISES

A. Complete the following dialogues:

Employee: Restaurant. ________ I help you?

Caller: What ________ do you ________ this evening?

Employee: ________ 7.00, Sir. And ________ and ________.

Caller: I'd ________ to reserve a ________ for two, please.

Employee: For ________ ________, sir?

Caller: 8.15.

Employee: May I ________ your ________, please?

Caller: ________.

Employee: A ________ for two ________ this evening ________ 8.15 ________ Mr. Sumit.

Caller: ________ right

Employee: Thank you, Sir.
Caller: Thank you. Good-bye.

B. The Restaurant: Role playing

The caller

(a) Your name's Rishi.

You want to know what time the restaurant opens.

You want a table for two at 8.00.

9.00 will be all right.

(b) Your name's Carney.

You want to reserve a table for this evening.

There will be six of you.

You want a table for 8.30.

(c) Your name's Ricki.

You'd like to have lunch at 1.00.

You want to reserve a table near the window for three.