Lesson -1

Presentation

S1: Where did you get that book?
S2: From the library in my neighborhood.
S1: Is it a good book?
S2: Of course. It narrates human Civilization

Now let’s learn a lesson about Civilization & History

The students are divided into different groups and they are asked to comprehend the lesson by way of communicating among themselves. The teacher will act as a facilitator in the learning process.
Civilization & History

Most of the people who appear most often and most gloriously in the history books are great conquerors and generals and soldiers, whereas the people who really helped civilization forward are often never mentioned at all. We do not know who first set a broken leg, or launched a seaworthy boat, or calculated the length of the ear, or manured a field; but we know all about the killers and destroys. People think a great deal of them, so much so that on all the highest pillars in the great cities of the world you will find the figure of a conqueror or a general or a soldier. And I think most people believe that the greatest countries are those that have beaten in battle the greatest number of other countries and ruled over them as conquerors. It is just possible they are not the most civilized. Animals fight; so do savages; hence to be good at fighting is to be good in the way in which an animal or a savage is good, but it is not to be civilized. Even being good at getting other people to fight for you and telling them how to do it most efficiently- this, after all, is what conquerors and generals have done -is not being civilized. People fight to settle quarrels. Fighting means killing, and civilized peoples ought to be able to find some way of setting their disputes other than by seeing which side can kill off the greater number of the other side, and then saying that that side which has killed most has won. And not only has own, but because it has won, has been in the right. For that is what going to war means; it means saying that might is right.

That is what the story of mankind has on the whole been like. Even our own age has fought the two greatest wars in history, in which millions of people were killed or mutilated. And while today it is true that people do not fight and kill each other in the streets- while, that is to say, we have got to the stage of keeping the rules and behaving properly to each other in daily life- nations and countries have not learnt to do this yet, and still behave like savages.

But we must not expect too much. After all, the race of men has only just started from the point of view of evolution, human being are very young children indeed, babies, in fact, of a few months old. Scientists reckon that there has been life of some sort on the earth in the form of jelly-fish and that kind of creature for about twelve hundred million years; and there have been men for only one million years, and there have been civilized men for about eight thousand years at the outside. These figures are difficult to grasp; so let us scale them down. Suppose that we reckon the whole past of living creatures on the earth as one hundred years; then the whole past of man works out at about one month, and during that month there have been civilizations for between seven and eight hours. So you see there has been little time to learn in, but there will be oceans of time in which to learn better. Talking man's civilized past at about seven or eight hours, we may estimate his future, that is to say, the whole period between now and when the sun grows too cold to maintain life any longer on the earth, at about one hundred thousand years. Thus man-kind is only at the beginning of its civilized life, and as I say, we must not expect too much. The past of man has been on the whole a pretty beastly business, a business of fighting and bulling and gorging and grabbing and hurting. We must not expect even civilized peoples not to have done these things. All we can ask is that they will sometimes have done something else.
Practice

1. This essay can be divided into two main parts, although it has three paragraphs. Where do you think the second part begins- at the beginning of the second paragraph or of the third?

2. Which of the following sentences gives the best summary of the first part?
   - Some of the people who helped civilization forward are not mentioned at all in history books.
   - Conquerors and generals have been our most famous men, but they did not help civilization forward.
   - It is true that people today do not fight or kill each other in the streets.

3. Which of the following sentences best summarizes the second part of the essay?
   - In order to understand the long periods of history, we have to scale them down to shorter periods.
   - The past of man has been on the whole a pretty beastly business
   - Mankind is only at the beginning of civilized life; so we must not expect a great deal of civilization at this stage.
   - The word ‘figure’ is used both in the first paragraph and in the third. Does it have the same meaning in both places? If not, what are its two different meanings?
   - Is the author hopeful about the future of civilization? How do you know?

Production

Write an essay describing the salient features of civilization.

Lesson -2

Presentation

S1: I went to a lecture last night
S2: What was it above?
S1: Society and modern art
S2: I wish I’d gone with you
S1: Who gave the lecture?
S2: Oh, it was a robot.
Now let’s learn a lesson in which a mechanical teacher teaches lessons.

The students are divided into different groups and they are asked to comprehend the lesson by way of communicating among themselves. The teacher will act as a facilitator in the learning process.

The Fun They Had

Margie even wrote about it that night in her diary. On the page headed May 17, 2155, she wrote: ‘Today Tommy found a real book!’ It was a very old book. Margie’s grandfather once said that when he was a little boy his grandfather told him that there was a time when all stories were printed on paper. They turned the pages, which were yellow and crinkly, and it was awfully funny to read words that stood still instead of moving the way they were supposed to—on a screen, you know. And then, when they turn back to the page before, it had the same words on it that it had when they read it the first time. ‘Gee,’ said Tommy, ‘what a waste when you’re through with the book, you just throw it away, I guess. Our television screen must have had a million books on it and its good for plenty more. I wouldn’t throw it away.’ ‘Same with mine,’ said Margie. She was eleven and hadn’t seen as many tele-books as Tommy had. He was thirteen. She said, ‘Where did you find it?’ ‘In my house.’ He pointed without looking, because he was busy reading. ‘In the attic.’ ‘What is it about?’ ‘School’.

Margie was scornful. ‘School? What there to write about school? I hate school.’ Margie always hated school, but now she hated it more than ever. The mechanical teacher had been giving her test after test in geography and she had been doing worse and worse until her mother had shaken her head sorrowfully and sent for the county inspector. He was a round little man with a red face and a whole box of tools with dials and wires. He smiled at her and gave her an apple, then took the teacher apart. Margie had hoped he wouldn’t know how to put it together again, but he knew how all right and, after an hour or so, there it was again, large and black and ugly with a big screen on which all lessons were shown and the questions were asked. That wasn’t so bad. The part she hated most was the slot where she had to put homework and test papers. She always had to write them out in a punch code they made her learn when she was six years old, and the mechanical teacher calculated the mark in no time. The inspector had smiled after he was finished and patted her head. He said to her mother, ‘It’s not the little girl’s fault, Mrs. Jones. I think the geography sector was geared a little too quick. Those things happen sometimes. I’ve slowed it up to an average ten—ears
level. Actually, the over-all pattern of her progress is quite satisfactory,' and he patted Margie's head again.

Margie was disappointed. She had been hoping they would take the teacher away altogether. They had once taken Tommy's teacher away for nearly a month because the history sector had blanked out completely. So she said to Tommy, 'why would anyone write about school?' Tommy looked at her with very superior eyes. 'Because it's not our kind of school, stupid. This is the old kind of school that they had hundreds and hundreds of years ago.' He added loftily, pronouncing the word carefully, 'centuries ago.' Margie was hurt. 'Well, I don't know what kind of school they had all that time ago.' She read the book over his shoulder for a while, and then said, 'anyway, they had a teacher.' 'Sure they had a teacher, but it wasn't a regular teacher. It was a man.' 'A man? How could a man be a teacher?' 'Well, he just told the boys and girls things and gave them homework and asked them questions.' 'A man isn't smart enough.' 'Sure he is. My father knows as much as my teacher.' 'He can't. A man can't know as much as a teacher.' 'He knows almost as much, I betcha Margie wasn't prepared to dispute that. She said, 'I wouldn't want a strange man in my house to teach me.' Tommy screamed with laughter. 'You don't much, Margie. The teachers didn't live in the house. They had a special building and all the kids went there,' and all the kids learned the same thing?' 'Sure, if they were the same age.' 'But my mother says a teacher has to be adjusted to fit the mind of each boy and girl it teaches and that each kid has to be taught differently.' 'Just the same, they didn't like it that way then. If you don't like it, you don't have to read the book.' 'I didn't say I didn't like it,' Margie said quickly. She wanted to read about those funny schools.

They weren't even half finished when Margie's mother called Margie! School! Margie looked up. 'Not yet, mamma.' 'Now,' said Mrs. Jones. 'And it's probably time for Tommy, too.' Margie said to Tommy 'can I read the book some more with you after school?'' 'Maybe,' he said, nonchalantly. He walked away whistling, the dusty old book tucked beneath his arm. Margie went in to the schoolroom. It was right next to her bedroom, and the mechanical teacher was on and waiting for her. It was always on the same time every day except Saturday and Sunday, because her mother said little girls learned better if they learned at regular hours. The screen was lit up, and it said: 'Today's arithmetic lesson is on the addition of proper fractions. Please insert yesterday's homework in the proper slot.' Margie did so with a sigh. She was thinking about the old schools they had when her grandfather's grandfather was a little boy. All the kids from the whole neighborhood came, laughing and shouting in the schoolyard, sitting together in the schoolroom, going home together at the end of the day. They learned the same things so they could help one another on the homework and talk about it. And the teachers were people....the mechanical teacher was flashing on the screen: 'when we add the fractions ½ and ¼... .' Margie was thinking about how the kids must have loved it in the old days. She was thinking about in the fun they had.

Practice

If we have to describe something in a paragraph, we can make a plan by asking various questions about it. For example, here are some questions about a telebook:

1. Is it like an ordinary book?
2. In what way is it different?
3. How do people read it?
4. What is the advantage of telebooks?
5. What is the disadvantage?
Now, here is a paragraph based on the answers to these questions. Notice that it is a
continuous paragraph, not a series of unconnected statements.

A telebook is quite different from an ordinary book. In an ordinary book, words are printed
on pages and remain there. A telebooks, on the other hand, consists of words which appear on
a television screen and keep moving on it. People read a telebook by reading the words as
they appear on the screen. The advantage of telebooks is that a great number of such books
can be shown on a single television screen. The disadvantage is that we cannot turn back the
pages to read something again.

Here are two sets of questions. One of them is on the ordinary school 9 of the 20th century).
The other is on the mechanical teacher (of the 22nd century). Study the questions and write
two separate paragraphs based on them.

(a) An ordinary school
1. Where is it? (In a special building or in each child’s house?)
2. Who goes to it?
3. Do they enjoy themselves? How?
4. Do they all learn the same things? Who are they taught by?
5. What is advantage of such a school? (helping one another)
6. What is the disadvantage? (lessons not adjusted to each child)

(b) A mechanical teacher
1. What is a mechanical teacher? (not a man or woman, but a machine with a
   screen)
2. How does it teach (moving words on the screen)
3. Does it give homework and tests? (punch code)
4. How must the answers be written? (slot)
5. Can the speed teaching be adjusted?
6. Can the teacher go wrong sometimes?
7. What can be done then?
8. What is the advantage of such a teacher? (adjustment to suit each child)
9. What it its disadvantage? (your own opinion)

Production

You probably know that several centuries ago, people wrote not on paper but on palm-leaf
(e.g. in India) or on parchment, i.e. leather made smooth and soft (e.g. in Europe). They did
not write with an ordinary pen and ink, but with a metal pen which was like a big needle.
There were no printing presses; each copy of a book had to be written by hand.

Imagine a boy and a girl (give them names) of this century. The boy finds a book
written; several centuries ago, on palm-leaf or parchment (choose one of the two). He is older
than the girl and has read about such books. The girl does not know about such books, and is
therefore puzzled by what they have found. The boy tells her what he knows and they then
discuss the advantages (e.g. each book is something special and precious) and disadvantages
(e.g. not many copies) of such books.

Now write out a conversation between the boy and the girl, using the above points and
any other points that you can think of. You can begin in the following way:

(Boy) Look what I have found!

(Girl) what is it?
(Boy) it’s a book.

(Girl) A book! But it doesn’t look at all like a book. It’s not even made of paper.

(Boy) No, but they didn’t make books from paper in the old days. There was no paper at all in those days.

(Girl) what is it made of, then?

Lesson -3

Presentation

S1: Have you ever heard the story of Markandeya?

S2: I’m afraid, I haven’t

S1: It’s about a boy who was doomed to live for sixteen years only.

S2: What a pity? What happened later?

S1: Oh! By praying to Lord Siva, he lived for ever.

Now let’s a story in which the protagonist has limited time to see

The students are divided into different groups and they are asked to comprehend the lesson by way of communicating among themselves. The teacher will act as a facilitator in the learning process.

Three Days to see

All of us have read thrilling stories in which the hero had only a limited and specified time to live. Sometimes it was as long as a year; sometimes as short as twenty four hours. But always we were interested in discovering just how the doomed man chose to spend his last days or his last hours. I speak, of course, of free men who have a choice, not condemned criminals whose sphere of activities is strictly delimited. Such stories set us thinking, wondering what we should do under similar circumstances. What events, what experiences,
and what associations should we crowd into those last hours as mortal beings? What happiness should we find in reviewing the past, what regrets? Sometimes I have thought it would be an excellent rule to live each day as if we should die tomorrow. Such an attitude would emphasize sharply the values of life. We should live each day with gentleness, vigor, and a keenness of appreciation which are often lost when time stretches before us in the constant panorama of more days and months and years to come. There are those, of course, who would adopt the epicurean motto of 'eat, drink, and be merry,' but most people would be chastened by the certainty of impending death.

In stories, the doomed hero is usually saved at the last minute by some stroke of fortune, but almost always his sense of values is changed. He becomes more appreciative of the meaning of life and its permanent spiritual values. It has often been noted that those who live, or have lived, in the shadow of death bring mellow sweetness to everything they do. Most of us, however, take life for granted. We know that one day we must die, but usually we picture that day as far in the future. When we are in buoyant health, death is all but unimaginable. We seldom think of it. The days stretch out in an endless vista. So we go about our petty tasks, hardly aware of our listless attitude toward life. The same lethargy, I am afraid, characterizes the use of all our faculties and senses. Only the deaf appreciate hearing, only the blind realize the manifold blessings that lie in sight. Particularly does this observation apply to those who have lost sight or hearing in adult life. But those who have never suffered in impairment of sight or hearing seldom make the fullest use of these blessed facilities? Their eyes and ears take in all sights and sounds hazily, without concentration, and with little appreciation. It is the same old story of not being grateful for what we have until we lose it, of not being conscious of health until we are ill.

I have often thought it would be a blessing if each human being were stricken blind and deaf for a few days at some time during his early adult life. Darkness would make him more appreciative of sight; silence would teach him the joys of sound. Now and then I have tested my seeing friends to discover what they see. Recently I was visited by a very good friend who had just returned from a long walk in the woods, and I asked her what she had observed. 'Nothing in particular,' she replied. I might have been incredulous had I not been accustomed to such responses, for long ago I became convinced that the seeing see little. How was it possible, I asked myself, to walk for an hour through the woods and see nothing worthy of note? I who can-not see find hundreds of things to interest me through mere touch. I feel the delicate symmetry of a leaf. I pass my hands lovingly about the smooth skin of a silver birch or the rough shaggy bark of a pine. I spring I touch the branches of trees hopefully in such of the bud, the first sign of awakening nature after her winter sleep. I feel the delightful, velvety texture of a flower, and discover its remarkable convolutions; and something of the miracle of nature is revealed to me. Occasionally, if I am very fortunate, I place my hand gently on a small tree and feel the happy quiver of a bird in full song. I am delighted to have the cool waters of a brook rush through my open fingers. To me a lush carpet of pine needles or spongy grass is more welcome than the most luxurious Persian rug. To me the pageant of seasons is a thrilling and unending drama, the action of which is streams through my finger tips.

At times my heart cries out with longing to see all these things. If I can get so much pleasure from mere touch, how much more beauty must be revealed by sight. Yet, those who have eyes apparently see little. The panorama of color and action which fills the world is taken for granted. It is human, perhaps, to appreciate little that which we have and to long for that which we have not, but it is a great pity that in the world of light the gift of sight is used only as a mere convenience rather than as a means of adding fullness to life. If I were
president of a university I should establish a compulsory course in 'How do you use your eyes'. The professor would try to show his pupils how they could add joy to their lives by really seeing what passes unnoticed before them. He would try to awake their dormant and sluggish faculties. Suppose you set your mind to work on the problem of how you would use your own eyes if you had only three more days to see. If with the oncoming darkness of the third night you knew that the sun would never rise for you again, how do spend those three precious intervening days? What would you most want to let your gaze rest upon?

I, naturally, should want most to see things which have become dear to me through my years of darkness. You, too, would want to let your eyes rest long on the things that have become dear to you so that you could take the memory of them with you into the night that loomed before you. I should want to see the people whose kindness and gentleness and companionship have made my life worth living. First I should like to gaze long upon the face of my dear teacher, Mrs. Anne Sullivan Macy, who came to me and when I was a child and opened the outer world to me. I should want not merely to see the outline of her face, so that I could cherish it in my memory, but to study that face and find it in the living evidence of the sympathetic tenderness and patience with which she accomplished the difficult task of my education. I should like to see in her eyes that strength of character which has enabled her to stand firm in the face of difficulties, and that compassion for all humanity which she has revealed to me so often.

I do not know what is to see into the heart of a friend through that 'window of the soul', the eye. I can only 'see' through my finger tips the outline of a face. I can detect laughter, sorrow, and many other obvious emotions. I know my friends from the feel of their faces. But I cannot really picture their personalities by touch, I know their personalities, of course, through other means, through the thoughts they express to me, through whatever of their actions are revealed to me. But I am sure denied that deeper understanding of them which I am sure would come through sight of them through watching their reactions to various expressed thoughts and circumstances, through noting the immediate and fleeting reactions of their eyes and countenance. Friends who are near to me I know well because through the months and years they reveal themselves to me in all their phases; but of casual friends I have only an incomplete impression, an impression gained from a handclasp, from spoken words which I take from their lips with my finger tips, or which they tap into the palm of my hand. How much easier, how much more satisfying it is for you who can see to grasp quickly the essential qualities of another person by watching the subtitles of expression, the quiver of a muscle, the flutter of a hand. But does it ever occur to you to use your sight to see in to the inner nature of the friend or acquaintance? Do not most of you seeing people grasp casually the outward features of the face and let it go at that?

For instance, can you describe accurately the faces of five good friends? Some of you can, but many cannot. As an experiment, I have questioned husbands of long standing about the color of their wives' eyes, and often they express embarrassed confusion and admit that they do not know. And, incidentally, it is a chronic complaint of wives that their husbands do not notice new dresses, new hats, and changes in household arrangements. The eyes of seeing persons soon become accustomed to the routine of their surroundings, and they actually see only the startling and spectacular. But even in viewing the most spectacular sights the eyes are lazy. Court records reveal everyday how inaccurately 'eyewitnesses' see. A given event will be 'seen' in different ways by as many witnesses. Some see more than others, but few see everything that is within the range of their vision. Oh, the things that I should see if I had the power of sight for just three days!
Practice

1. The title of the essay is ‘Three Days to See’, but the author talks about various other things as well. Can you divide the essay into two main parts in such a way that the second part will be properly described by the title ‘Three Days to See’? Where does the second part begin, in that case? What would be suitable title for the first part?

2. Can you now sub-divide the first part into two, one sub-division having to do with living and the other with seeing? Where would the second sub-division start?

3. This essay is written in general terms (i.e. it expresses the author’s thoughts, suggestions, and observations) except in two places. In one of the two places a particular incident in the author’s life is described; in the other a real person is described. Where are those two places?

4. The author of this essay was blind as well as deaf. The first fact is stated more or less plainly in one place; the second is indicated in another. Where are those two places?

5. Here is the scheme for summarizing the first five paragraphs of the essay. Copy it and put in the necessary details were indicated.
   1. Generally, we talk life for granted because.....
   2. We would appreciate life better if we had....
   3. This happens in two kinds of situation.....
      (a) In stories.
      (Exceptions: ....)
      (b) If we make it a rule to....
      (Exceptions: Those who...)

6. Next, study scheme below. Which paragraph does it summarize? Fill in the details, where they are not given.
   a. Generally, those who have never lost their sight or hearing....
      (Example: ....)
   b. They would appreciate the value of their eyes better:
      (a) If they didn’t have the use of them.
      (Example: ....)
      (b) If they were trained...

7. The author says (Para 9) ‘To me the pageant of seasons is a thrilling and unending drama, the action of which streams through my finger tips.’ What does she mean, especially in the second part of the sentence? Where else in the essay does she mention her finger tips? What is the special importance of finger tips to her?

8. In paragraph 10, the author says that ‘those who have eyes apparently see little.’ Is she simply repeating the same point in paragraph 19? Or does she make a further point here? If she is making a further point, what is that point? If she is not making a further point, why do you think she repeats the same point?

9. Is there any indication in the essay that the author has a sense of humour? Which part of the essay would you point to as an example of gentle humour?

10. What are the most impressive qualities of this essay? choose two of the following:
   a. Humour.
   b. Strong emotions.
   c. Directness and sincerity.
   d. Variety of facts and examples.
   e. Skilful argument.
   f. The truth of what is stated.
Production

Write a paragraph about what you would do if you had only three days to see. Would you try to see some of the things which you have seen in the past and which have given you delight? Or would you try to see things which you haven’t yet seen but have always wanted to see? Would you want to see places, people or cultural events? Briefly describe two or three of them and say why you would choose them rather than any others.

Lesson -4

Presentation

S1: Have you heard the story that a scientist discoursed some scientific fact while taking bath?

S2: Of course. That’s an interesting incident. I have also heard about the discovery of a mathematical rule while Ramanujan was dreaming.

S1: Well, I’m sure that discoveries are made in different situations.

S2: I hope so. Why can’t we try to discover some scientific fact while eating apples?

Now let’s learn about The Laws of Nature

The students are divided into different groups and they are asked to comprehend the lesson by way of communicating among themselves. The teacher will act as a facilitator in the learning process.

The laws of nature

The phrase ‘A law of nature’ is probably rarer in modern scientific writing than was the case some generations ago. This is partly due to a very natural objection to the use of the word ‘law’ in two different senses. Human societies have laws. In primitive societies there is no distinction between law and custom. Some things are done, others or not. This is regarded as the part of the nature of the things, and generally as an unalterable fact. If customs change, the change is too slow to be observed. Later on kings and prophets could promulgate new laws, but there was no way of revoking old ones. The Greek democracies made the great and revolutionary discovery that a community could consciously make new laws and repeal old ones. So for us a human law is something which is valid only over a certain number of people.
for a certain period of time. Laws of nature, however, are not commands but statements of facts. The use of the same word is unfortunate. It would be better to speak of uniformities of nature. This would do away with the elementary fallacy that a law implies a law-giver. Incidentally, it might just as well imply a parliament or soviet of atoms. But the difference between the two uses of the word is fundamental. If a piece of matter does not obey a law of Nature it is not punished. On the contrary, we say that the law has been incorrectly stated. It is quite probable that every law of Nature so far stated has been stated in-correctly. Certainly many of them have. Nevertheless, these inaccurately stated laws are of immense practical and theoretical value.

They fall into two classes-qualitative laws such as ‘All animals with feathers have breaks’ and quantitative laws such as ‘Mercury, has 13.596 times the density of water’ the first of these is a very good guide. But it was probably not true in the past. For many birds which were certainly feathered had teeth and may not have had beaks. And it is quite possibly not true today. There are about a hundred thousand million birds on our planet, and it may well be that two or three of them are freaks which have not developed to beak, but have lived long enough to grow feathers. It was thought to be a law of nature that female mammals (defined as warm-blooded vertebrates with hair) had mammary glands; until prof. Drew of Edinburgh found that many congenitally hairless female mice lacked these organs, though they could bear young which other females could then foster. And quantitative laws generally turn out to be inexact. Thus water is nothing definite. It is a mixture of at least six different substances. For in the molecule H2O, one or both of the hydrogen atoms may be either light or heavy, and so may the oxygen atom. Similarly, mercury consists of several different types of atom. Thus the ratio of the densities of mercury and water is not fixed, though in the case of ordinary samples the variation is too small to be detected. But it can be detected if the water happens to have been taken from an accumulator which has been used for some time.

In his theory of probability (Oxford 1939) Jefferys has something new to say about induction. Two contradictory theories are in vogue as to the laws of nature. The older view is that they are absolute, though of course they may have been inaccurately formulated. The extreme positivistic view, enunciated by vahinger, is that we can only say that phenomena occur as if certain laws held. There is no sense in making any definite statements, though it is convenient to do so. New Jefferys points out that, if a number of observations have been found to conform to a law, it is highly probable that the next one will do so whether the law is true or not. In Jefferys’ words: ‘A well-verified hypothesis will probably continue to lead to correct inferences even if it is wrong.’ Positivities and idealists have made great play with the fact that many laws of nature, as formulated by scientists, have turned out to be inexact, and all may do so. But that is absolutely no reason for saying that there are no regularities in Nature to which our statements of natural law correspond. One might as well say that because no maps of England give its shape exactly it has no shape.

What is remarkable about the laws of Nature is the accuracy of simple approximations. One might see a hundred thousand men before finding an exception to the rule that all men have two ears, and the same is true for many of the laws of physics. In some cases we can see why. The universe is organized in aggregates, with, in many cases, the pretty wide gaps between them. Boyle’s law that the density of a gas is proportional to its pressure, and Charles’ law that the volume is proportional to the temperature, would be exact if gas molecules were points which had no volume and did not attract one another. These laws are very nearly true for gases at ordinary temperatures and pressures, because the molecules occupy only a small part of the space containing the gas, and are close enough to
attract one another only during a very small part of any interval of time. Similarly, most of the stores are far enough apart to be treated as points without much error when we are considering their movements.

And most men manage to protect themselves from injury so far as is needed to keep both ears. Whereas trees cannot protect themselves from the loss of branches. It is very rare to see a completely unmitigated, and therefore completely regular, tree. Mendel's laws, according to which two types occur in a ratio 1:1 in some cases and 3:1 in others, are theoretically true if the processes of division of cell nuclear are quite regular, and if neither type is unfit so as to die off before counts are made. The first condition never holds, and the second probably never does. But the exceptions to the first condition are very rare. In one particular case a critical division goes wrong about one in ten thousand times. The effect of this on a 1:1 ratio or 3:1 ratio could be detected only by counting several hundred million plants or animals. Differences in relative fitness are more important. But even so the Mendelian ratios are sometimes fulfilled with extreme accuracy, and are generally a good rough guide. Jeffreys points out that in such cases it is often much better to stick to the theoretical law rather than the observed data. For example, if you are breeding silver foxes and a new colour variety occurs which, if crossed to the normal, gives normal and 10 of the new colour, you are much more likely to get a ratio of about 1:1 than 13:10 if you go on with such makings, even though if you breed man thousands the 1:1 ratio will not hold exactly. The mathematical theory which Jeffreys has developed concerning such cases is particularly beautiful, but can hardly be summarized here.

Practice

Study the following two-sentence paragraph:

a. When primitive societies developed into monarchies, the nature of laws changed. It is true that there was still no way of revoking old laws, but kings could now make new ones.

This paragraph contains a general statement (the first sentence) and two facts. One of the facts contradicts the general statement and the other supports it. Notice that the fact contradicts the general statement (‘it is true that’) is given before the fact that supports it.

Suppose we wish to use the same two facts in a paragraph with a very different general statement, such as the following:

Even in monarchies, the nature of laws did not change much.

This is quite the opposite of the general statement in (a). How can we use the two facts with this statement? We simply reverse the order of the facts, so that the fact which contradicts the general statement is given first. Observe how this is done below:

b. Even in monarchies, the nature of laws did not change much. It is true that kings could now make new laws, but there was still no way of revoking old ones.

This is very simple technique which is very useful in composition. If this technique is misused, however, we get bad composition, such as the following:

c. Even in monarchies, the nature of laws did not change much. It is true that there was still no way of revoking old laws, but kings could now make new ones.

Why is this bad paragraph? Because the general statement says one thing while the facts are arranged in such a way as to imply something quite different. We should learn to avoid such paragraphs.
Here are some general statements and facts. Rewrite them in two-sentence paragraphs, like (a) and (b) above.

1. Customs in primitive societies were considered unalterable. They changed. The change was too slow to be observed.
2. It is wrong to criticize attempts to formulate the laws of Nature. These laws are of immense practical and theoretical value. Many of them have been inaccurately stated.
3. We need not reject the law that ‘All animals with feathers have beaks.’ It is a very good guide for scientists. It was not always correct in the past and is not always correct today.
4. Mercury has 13,5096 times the density of water’ is not an accurate statement. We do not normally notice variations in density. These variations exist and should be considered when stating a scientific law.
5. The rule that all men have two ears is remarkably accurate. It is possible to find people who haven’t got two ears. We may have to observe a hundred thousand people before we find one.
6. If we are breeding new varieties of animals or plants, Mendel’s laws can be a more reliable guide than a small number of observed facts. When we have bred a large number, the over-all ratio will be close to 1:1 or 3:1. The proportion of each type will not confirm exactly to Mendal’s ratios.

Production

(a) There are two places in this essay where analogy (i.e. the example of a similar situation) is used in an argument. One of them is paragraph 2, sentences 4 and 5. The analog here is used by other people; the author disagrees with their argument and calls it a fallacy. Their argument and his reply can be amplified as follows:

Theists (i.e. people who believe that there is a God) argue that the word ‘law’ implies a law – giver. Human societies have laws and we know that these are made by kings and prophets Nature also has laws, and so there must be someone who made these laws. That ‘someone’ is God.

J.B.S. Haldane disagrees with this argument. He points out, first of all, that human laws are quite different from Nature’s laws. In fact, the use of the same word in these two contexts is quite misleading. Secondly, even if we accept the theists’ analogy, it does not follow that Nature laws are made by a God. They may have been made by a parliament of atoms, just as human laws are often made by parliaments of men and women.

Now write a similar amplification of the other analogy in the essay (paragraph 7, last sentence). Here the analogy is used by the author himself. First describe the argument of the positives and then explain how J.B.S Haldane disagrees with that argument. Use the following hints.

(Positives – no laws exist - true that phenomena occur as if they did, but no sense in making definite statements - man laws are inaccurate - all may be so.)

(Haldane disagrees - true, man laws are inaccurate but that does not mean... maps of England inaccurate but we know England has a shape-statements of regularities may be inaccurate, but regularities may exist.)
(b) In the exercise above, we took a brief statement made by the author and explained it in detail. Let us now try to do the opposite. Let us make a précis of the four paragraphs of Haldane’s essay. Précis’ means a brief summary, containing on the main points are main arguments.

We can write our précis’ either in a single paragraph or in two or three short paragraphs. In this case as there are two main points in the passage to be summarized – (i) two uses of the word ‘law’; (ii) two kinds of laws of nature-it is best to write it in two short paragraphs.

Next we must make a plan for each paragraph, remembering that we want onl the main points. We must, for instance, cut out the point that people don’t use the phrase much nowadays.

We must cut out the point the Greek democracies made a revolutionary discovery; and we must certainly cut out the remarks about a law-giver and the parliament of atoms.

Perhaps we should keep only the following points in our précis:

Para 1 two uses of the word ‘law’:

a. Laws of human societies: customs, rules made by kings or parliaments; valid only for some people for some of the time.
b. Laws of Nature: statements of regularities in nature; often inaccurately stated but of great practical and theoretical value.

Para 2 two kinds of laws of Nature:

a. Qualitative (e.g. ‘All animals with feathers have breaks’) and quantitative (e.g., Mercury has 13.596 times the density of water’). 
b. Both are good guides but neither is wholly accurate.
   1. Beakless bird species may have existed in the past, beakless freaks may exist today.
   2. Water molecules may contain heavy or light atoms of oxygen or hydrogen; mercury may consist of different types of atom.

Now write two short paragraphs using these plans.

Lesson-5

Presentation

S1: Don’t you want to be called a wise man?

S2: Of course, I would like to be called so. What’s wrong in it?

S1: Oh! Think about the story of Socrates. As he was wise, he was asked to drink poison. Do you want to drink poison?

S2: Oh, my god! I want to be called a wise man and get rewards also.
Now let’s learn the lesson entitled the Wisdom of Socrates

The students are divided into different groups and they are asked to comprehend the lesson by way of communicating among themselves. The teacher will act as a facilitator in the learning process.

The Wisdom of Socrates

I will try to explain to you what has given rise to these slanders and given me a bad name. Listen to them. Some of you will think that I am joking, but I assure you that I will tell you the whole truth. I have gained this bad reputation, Athenians, simply by reason of a certain kind of wisdom. What kind of wisdom? It is by that sort of wisdom which is possible to men. It may be that in having that I am really wise. But the men of whom I was speaking just now must be wise in wisdom, which is greater than human wisdom, or in some way which I cannot describe since I know nothing of it myself, and if any man says that I do know anything of superhuman wisdom, be he who is and wants to slander me. Do not interpret me, Athenians; even if you think that I am speaking arrogantly, I am going to say something which is not my own. I will tell you who says it and he deserves to be believed by you. I will bring the god of Delphi to be the witness of the fact of my wisdom and of its nature. You remember chaerephon. From youth upwards he was my comrade. You remember his character. He was impetuous. Once he went to Delphi and ventured to put this question to the Oracle—I entreat you again, my friends, not to cry out—be asked if there is any man who was wiser than I, and the priestess answered that there was no man chaerephon himself is dead, but his brother here will confirm what I say.

Why do I tell you this? I am going to explain to you origin of my unpopularity. When I heard what the Oracle had said I began to reflect. What could God mean by this dark saying? I know very well that I was not wise, even in the smallest degree. Then what could he mean by saying that I was the wisest of men? It cannot be that he was speaking falsely for he is a god and cannot lie. For a long time I was at a loss to understand his meaning. After turning it over in my mind for a long time I thought of a way of testing the matter went to a man who was said to be wise, thinking that there if anywhere I should prove the Oracle wrong, and meaning to point out to the Oracle its mistake. I should be able to say, ‘you said that I was the wisest of men, but this man is wiser than I am, So I examined the man—need not tell you his name; he was a politician—this was the result, Athenians, When I talked with him I
found that, though a great many persons, and most of all he himself, thought that he was wise, yet he was not wise, then I tried to prove to him that he was not wise though he fancied he was, and by so doing I made him, and many of the bystanders, my enemies. So when I went away I thought to myself, 'I am wiser than this man. Probably neither of us knows anything that is really good, but he thinks that he has knowledge, when he was not while I, having no knowledge, do not think that I have. I do not think that I know what I do not know, and on this point, at any rate, I seem to be a little wiser than he is.'

Next I went to another man who was said to be even wiser than the last, with exactly the same result. Here again I made him, and many other men, my enemies. I went on to one man after another, making enemies every day. This caused me much unhappiness and anxiety, but I thought that I must set God’s command above everything? So I had to go to every man who seemed to posses any knowledge, and search for the meaning of the Oracle. This was the result of the search which I made at God’s bidding: the men whose reputation for wisdom stood highest were among those most lacking in it, while others, who were looked down on as common people, were much better fitted to learn. Now I must describe to you the wanderings which I undertook to make full proof of the Oracle. After the politician I went to the poets, thinking that I should find myself clearly more ignorant than they. So I took up the poems on which I thought they had spent most pains, and asked them what they meant, hoping to learn something from them. I am ashamed to tell you the truth, my friends, but I must say it. Almost any of the bystanders could have talked about the works of these poets better than the poets themselves. So I soon found out that it is not wisdom that the poets create their works but by a certain natural power and by inspiration, like soothsayers and prophets who say fine things but who understand nothing of what they say. At the same time I saw that, because of their poetry, they thought that they were the wisest of men in other matters too, which they were not. So I went away again, thinking that I had the same advantage over the poets as I had over the politicians.

Finally I went to the skilled the workmen, for I knew very well that I possessed no knowledge at all worth speaking of, and I was sure that I should find that they knew many fine things, and in that I was not mistaken. But, Athenians, they made the same mistake as the poets. Each of them believed himself to be extremely wise in matters of the greatest importance because he was skilled in his own art. I asked myself, on behalf of the Oracle, whether I would choose to remain as I was without either their wisdom or their ignorance, or to possess both, as they did. I made answer to myself and to the Oracle that it was better for me to remain as I was.

By reason of this examination, Athenians, I have made enemies of the very bitter and fierce kind, who have spread abroad a great number of slanders about me. People say that I am a 'wise man', thinking that I am wise myself in any matter in which I show another man to be ignorant. But, my friends, I believe that only God is really wise, and that men's wisdom is worth little or nothing. I do not think he meant that Socrates was wise. He only took me as an example as though he would say to men, 'He among you is the wisest who, like Socrates, knows that his wisdom is worth little at all.

Practice

Read the following paragraph and decide whether it has been properly constructed:
Socrates heard what the Oracle had said to Chaerephon. He began to wonder what it meant. He knew that he was not wise. The god of Delphi had said that he was. Gods did not lie. Socrates thought about this for a long time. He decided to test the matter. Perhaps he could prove that someone else was wiser than himself. He could tell the Oracle: ‘you said that I was the wisest man. This man is wiser than I am.’

This is not a well constructed paragraph because it does not show the connections between the different facts. Such connections are usually shown by words such as ‘when’, ‘although’, ‘if’, ‘and’, ‘yet’, etc. let us see what the paragraph looks like when these words are put in:

When Socrates heard what the Oracle had said to Chaerephon, he began to wonder what it meant. He knew that he was not wise, yet the god Delphi had said that he was; and gods did not lie. Socrates thought about this for a long time. Then he decided to test the matter. If he could prove that someone else was wiser than himself, he could tell the Oracle: ‘you said that I was the wisest man, yet this man is wiser than I am.’

Now here is a paragraph like (a) without the connecting words. Rewrite it with suitable connecting words wherever they are needed.

Socrates had examined the politicians. He had examined some other people. He decided to test the poets. He thought that a poet would be wiser than himself. He himself if knew nothing about poetry. He took up some poems. He went to the man who had written them. He question the man about the poems. He found that the man could not explain his own poems. Almost any of the bystanders could have explained the poems better. Socrates discovered something. It was not wisdom that enabled poets to write poetry. It was a natural power and inspiration.

Production

Here is a series of questions, the answers to which will make a good summary of Socrates’ speech. Study the questions and then write the answers in such a way that they make a continuous essay of three paragraphs. Do not write about that are not required by the questions.

I: What made Socrates start on his search for wisdom?

1. What did the Oracle say?
2. What did Socrates think about it?
3. What did he decide to do?
4. Why?

II: How did he conduct the search and what was the result?

i. Why did he go to the politician? What did he find out?
ii. What did the politician and others who were standing by think about Socrates?
iii. Who else did he go to? Was the result different in any way?
iv. Did he stop his search after examining a few people? Why?
v. Did he suffer as a result of his search for wisdom? In what way?
III: What did Socrates conclude in the end?
   a. What had the oracle really meant?
   b. Was the oracle right?

Rewrite the lesson as it is narrated by a third person instead of Socrates.

Lesson -6

Presentation

S1: Why do you have to go to Hawaii?

S2: I’m going out on business.

S1: How will you travel, by boat or by plane?

S2: Most likely, I’ll go by plane.

S1: How does the plane fly?

S2: Oh, it requires oil.

Now let’s learn the lesson entitled oil

The students are divided into different groups and they are asked to comprehend the lesson by way of communicating among themselves. The teacher will act as a facilitator in the learning process.
Oil

There are three main groups of oils: animal, vegetable and mineral. Great quantities of animal oil come from whales, those enormous creatures of the sea which are the largest remaining animals in the world. To protect the whale from the cold of the Arctic seas, nature has provided it with a thick covering of fat called blubber. When the whale is killed, the blubber is stripped off and boiled down, either on broad ship or on shore. It produces a great quantity of oil which can be made into food for human consumption. A few other creatures yield oil, but none so much as the whale. The livers of the cod and the halibut, two kinds of fish, yield nourishing oil. Both cod liver oil and halibut liver oil are given to sick children and other invalids who need certain vitamins. These oils may be bought at any chemist’s. Vegetable oil has been known from antiquity. No household can get on without it, for it is used in cooking. Perfumes may be made from the oils of certain flowers. Soaps are made from vegetable and animal oils. To the ordinary man, one kind of oil may be as important as another. But when the politician or the engineer refers to oil, he almost always means mineral oil, the oil that driver’s tanks, aero planes and warships, motor—cars and diesel locomotives; the oil that is used to lubricate all kinds of machinery. This is the oil that has changed the life of the common man. When it is refined into petrol it is used to drive the internal combustion engine. To it we owe the existence of the motor-car, which has replaced the private carriage drawn by the horse. To it we owe the possibility of flying. It has changed the methods of warfare on land and sea. This kind of oil comes out of the earth. Because it burns well, it is used as fuel and in some ways it is superior to coal in this respect. Many big ships now burn oil instead of coal. Because it burns brightly, it is used for illumination; countless homes are still illuminated with oil-burning lamps. Because it is very slippery, it is used for lubrication. Two metal surfaces rubbing together cause friction and heat; but if they are separated by a thin film of oil, the friction and heat are reduced. No machine would work for long if it were not properly lubricated. The oil used for this purpose must be of the correct thickness; if it is too thin it will not give sufficient lubrication, and if it is too thick it will not reach all parts that must be lubricated.

The existence of oil wells has been known for a long time. Some of the Indians of North America used to collect and sell the oil from the wells of Pennsylvania. No one, however, seems to have realized the importance of this oil until it was found that paraffin oil could be made from it; this led to the development of the wells and to the making of enormous profits. When the internal combustion engine was invented, oil became of worldwide importance. What was the origin of the oil which now drivers our motor-cars and air-craft? Scientists are confident about the formation of coal, but they do not seem so sure when asked about oil. They think that the oil under the surface of the earth originated in the distant past, and was formed from living things in the sea. Countless billions of minute sea creatures and plants lived and sank to the sea bed. They were covered with huge deposits of mud; and by processes of chemistry, pressure and temperature were changed through long ages into what we know as oil. For these creatures to become oil, it was necessary that they should be imprisoned between layers a rock for an enormous length of time. The statement that oil originated in the sea is confirmed by a glance at a map showing the chief oilfields of the world; very few of them are far distant from the oceans of today. In some places gas and oil come up to the surface of the sea from its bed. The rocks in which oil is found are of marine origin too. They are sedimentary rocks, rocks which were laid down by the action of water on the bed of the ocean. Almost always the remains of shells, and other proofs of sea life, are found close to the oil. A very common sedimentary rock is called shale, which is a soft rock and was obviously formed by being deposited on the sea bed. And where there is shale there is likely to be oil.
Geologists, scientists who study rocks, indicate the likely places to the oil drillers. In some cases oil comes out of the ground without any drilling at all and has been used for hundreds of years. In the island of Trinidad the oil is in the form of asphalt, a substance used for making roads. Sir Walter Raleigh visited the famous pitch lake of Trinidad in 1595; it is said to contain several thousand million tons of asphalt. There are probably huge quantities of crude oil beneath the surface. The king of the oilfield is the driller. He is a very skilled man. Sometimes he sends his drill more than a mile into the earth. During the process of drilling, gas and oil at great pressure may suddenly be met, and if this rushes out and catches fire the oil well may never be brought into operation at all. This danger is well known and steps are always taken to prevent it. There is a lot of luck in drilling for oil. The drill may just miss the oil although it is near; on the other hand, it may strike oil at a fairly high level. When the drill goes down, it brings up soil. The samples of soil from various depths are examined for traces of oil. If they are disappointed at one place, the drillers go to another. Great sums of money have been spent, for example in the deserts of Egypt, in ‘prospecting’ for oil. Sometimes little is found. When we buy a few gallons of petrol for our cars, we pay not only the cost of the petrol, but also part of the cost of the search that is always going on.

When the crude oil is obtained from the field, it is taken to the refineries to be treated. The commonest form of treatment is heating. When the oil is heated, the first vapours to rise are cooled and become the finest petrol. Petrol has a low boiling point; if a little is poured into the hand, it soon vaporizes. Gas that comes off the oil later is condensed into paraffin. Last of all the lubricating oils of various grades are produced. What remains is heavy oil that is used as fuel. There are four main areas of the world where deposits of oil appear. The first is that of the Middle East, and includes the regions near Caspian sea, the Black sea, the Red sea and the Persian gulf. Another is a area between North and South America, and the third between Asia and Australia, includes the islands of Sumatra, Borneo and Java. The fourth area is the part near the North Pole. When all the present oil fields are exhausted, it is possible that is cold region may become the scene of oil activity. Yet the difficulties will be great, and the costs may be so high that no company will undertake the work. If progress in using atomic power to drive machines is fast enough, it is possible that oil-driven engine. In that case the demand for oil will fall, the oilfields will gradually disappear, and the deposits at the North Pole may rest where they are ever.

Practice

Think of the kind of paragraph we discussed in previous lesson—the one in which we made a general statement at the beginning and then support it with details, one by one. The following five sentences can make up such a paragraph, but they are not in the proper order. Study them first.

1. All these have internal combustion engines which require petrol or diesel.
2. Modern society depends a great deal on mineral oil.
3. Secondly, there would be no motor-cars, aeroplanes or diesel engines for trains.
4. Without it, there would be no paraffin-oil for lighting or cooking.
5. Thirdly, modern warfare would be impossible because there would be no tanks or fast warships, which also have petrol-driven engines.

These sentences can be rearranged in such a way that they make a good, continuous paragraph. The proper arrangement is: 2+4+3+1+5. You can see this from the following:
Modern society depends on a great deal of mineral oil. Without it, there would be no paraffin oil for lighting or cooking, secondly there would be motor-cars, aeroplanes or diesel engines for trains. All these rely on internal combustion engines which require petrol or diesel. Thirdly, modern warfare would be impossible because there would be no tanks or fast warships, which also have petrol-driven engines.

Now, here are two sets of sentences. Each set can be rearranged in such a way that it makes a well-built, continuous paragraph. Study the sentences and then rearrange them properly.

(a)

i. Shale, for example, is a sedimentary rock, and where there is shale, there is likely to be oil.
ii. First, almost all the oil fields of the world are near the oceans of today.
iii. The theory that oil originated in the sea is supported by several facts.
iv. In some places, oil is in fact found in the sea, where it comes up to the surface from the bed of the sea.
v. Lastly, shells and other proofs of sea life are usually found near an oil well.
vi. Further, the rocks which oil is found are sedimentary rocks, which were formed originally in the sea.

(b)

a. Motor-cars, aeroplanes and ships use such engines.
b. It burns well and is therefore used as fuel for internal combustion engines.
c. Mineral oil has several properties which make it useful for a number of different purposes.
d. Secondly, it burns brightly and can therefore be used in oil lamps.
e. A lubricant is used to reduce friction between metal surfaces.
f. Thirdly, mineral oil is very slippery and therefore acts as a good lubricant.
g. A great many people in the world depend on oil lamps for illumination.

Production

Just as a paragraph requires a proper arrangement of sentences, so an essay requires a proper arrangement of paragraphs. The paragraphs in an essay should be so arranged that different aspects of the subject are described, one by one. For example, look at the way in which mineral oil has been described in the essay you have read. See the list under question 2 of comprehension –I.

Now, here are a number of points which could form the basis of an essay on coconut oil. Study them and then arrange them in such a way that they make a plan for a short essay of three paragraphs.

1. Used mainly as food, in cooking.
2. Made from coconuts.
3. A Vegetable oil.
4. Widely used in tropical areas where coconuts are plentiful.
5. Used as a hair oil.
6. The kernels of coconuts are dried, to remove their moisture.
7. Soap-makers also use it.
8. The dry kernels are put into a mill which squeezes out their oil content.
9. Put into bottles and tins for marketing.
10. Has been made and used for many centuries in countries such as India and Ceylon.

Lesson-7

Presentation

S1: I think I’ve got a fever.
S2: Do you feel very hot?
S1: Yes, and I’ve been sweating a lot.
S2: You’d better go to a doctor.
Now let's learn the lesson entitled Making surgery safe

The students are divided into different groups and they are asked to comprehend the lesson by way of communicating among themselves. The teacher will act as a facilitator in the learning process.

Making surgery safe

A French chemist in Lille studying why wine and beer turned bad in the vats; an English surgeon in Glasgow desperately fighting to save his patients from the awful scourges of disease as wounds or the incisions from their operation became septic; a Hungarian doctor in Vienna equally desperate at the terrible death-roll of the mothers after the children were born in his maternity hospital. In his early 1860s these three men knew nothing of each other, but each of them was working towards a discovery which saved millions of lives, revolutionized surgery, gave vast results in matters of our food, and supplied the clue to hundreds of diseases. That discovery was germs, microbes, the minute organisms which could only be seen through the most powerful microscopes, but which bred a life of their own, able to destroy the living tissues infected by them. It was in surgery that the most spectacular results of that discovery were obtained, and it was there that the battle between the new idea and old prejudices were fought out most dramatically. Its coming into that field changed the whole conditions under which operations were performed, and so enormously extended it possibilities that we reckon the art into eras: one covering the history of mankind from the earliest times to this time of Lister; the other, the period since. For in ancient India, in Egypt, Greece and Rome, surgery was practiced, and the instruments and knowledge were already remarkable. If it stagnated under mediaeval influences, it revived again under such men as Paracelsus in the sixteenth century, and moved steadily forward through the seventeenth and eighteenth centuries as human anatomy and physiology yielded their secrets to the scientists. In the nineteenth century one great discovery came to the aid of the surgeon when James young Simpson experimented with anesthetics, and so gave him time to perform his delicate work on patients unconscious of pain.

But one terrible thing remained wrong. In every hospital, whether from some original injury or from the surgeon's knife, wounds became inflamed, turned gangrenous, or developed some similar terrible degeneration, and in a few days the patient died as the whole blood stream became poisoned. Terrible epidemics of this 'Hospitalism' as they called it, would sweep through the wards. Often the authorities would deliberately close a hospital for a time to try to stamp out the plague. But always it returned. Even the simplest operation the removal of a single joint of a finger, the lancing of an abscess would prove fatal; and no operation was possible on the delicate parts of the human body, for almost inevitably they became infected, and however skillful the surgeon had been the patient died. It is a great Glasgow hospital a brilliant young surgeon named Joseph Lister fought this evil. He was an earnest young man, son of Quaker family, and he had concentrated his life to this task of making surgery safe. Once he said, concerning a wound that was healing healthily; 'it is the main object of my life to find out how to procure such a result in all wounds.' He had already set his feet along the right track by studying inflammation, making strange experiments with the foot of a frog and the wing of a bat under his microscope.

Said another great scientist: 'In the field of observation, change only favours the mind which is prepared.' Listers mind was marvelously prepared; they thought vaguely that there were gases in the air which caused wounds to become septic. Lister's own teacher had started that surgery had reached finality; but Lister worked on. He suspected that there were minute
organisms which entered wounds and set up their own-life—destroying life there, degenerating human tissue as the greenfly will destroy the rose. He began his experiments for some substance which would destroy this lower from of life, or build some barrier between it and the open wound. He found what he wanted in a powerful disinfectant, a by-product of coal-tar, which he learned that the authorities at Carlisle were using on their sewage. It was called carbolic. Lister introduced it into the hospital wards, into the operating room, into his surgical bandages. He dipped his instruments in it. He even sprayed the air around with a fine mist of carbolic while he performed his operations. Joseph Lister had introduced antiseptic surgery. It is fascinating that away in his maternity hospital in Vienna, Dr. Semmelweis had reached the same conclusion. There with greater violence even than in Britain, the thing flared into an unreasoned persecution of the pioneer by the old traditional men. Semmelweis published his idea of antiseptics; he was persecuted, revealed, laughed at, and dismissed from his post for advocating this new method. He was driven temporarily insane, but recovering, continued his experiments in private. In one of them he contracted the blood-poisoning he was seeking to eliminate and died; a martyr to truth—a prophet of progress who gave his life in a great cause.

Over in France the chemist, Louis Pasteur, had just published his studies of the cause of fermentation in wines. He demonstrated that the dust of the air contained minute organisms which increased and multiplied themselves in a kind of fungus when they came into contact with the right conditions. He conducted the most careful experiments, and demonstrated that fermentation which took place in the dust-laden air of Paris did not do so in the pure glacial air on the high Alps. When Lister read of these experiments he saw that in them, as he had long suspected, lay the final clue to his own problem. It was not until years afterwards that he heard of Semmelweis, but already an opposition similar to that which broke the Hungarian was growing here. Simpson himself, who as the pioneer of anesthetics had suffered a similar persecution for his own innovations, led the attack; and soon the old brigade of the medical men were bringing all their weapons of ridicule and wild accusation to bear on the ‘Spray and Gauze’ school, as they called Lister’s methods. One of the ugliest fights of Lister’s career was with the Glasgow Infirmary where he had started his practice of antiseptic surgery, for they bitterly resented an attack upon the position of their buildings, which happened to be built new feet above a cholera pit where hundreds of bodies were still decaying!

But Lister worked on. For nine months there were no cases of the dreaded ‘Hospitalism’ in the wards under his control. Terrible fractures and gaping wounds, which inevitably would have become septic under the old treatment, healed themselves when treated by his antiseptics and given their barrier of carbolic against the infected air. Operations performed by his sterilized instruments and cleaned with his sterilized swabs left cuts which naturally healed, when under the old system they would have broken down into gangrene or some other of the dread hospital diseases. Childbirth lost one part of its terrors, by the horror of septic conditions starting up after the child was born became almost eliminated. It was the fight of a new idea against the old and gradually the new won out. On the containment in Copenhagen and Leipzig, in Munich, and under the great doctor Volkmann at Halle, the idea of antiseptics expanded to that even greater one of the creating operating theatres and operating conditions which gives to place at all for microbes. The antiseptics of Lister evolved into the aspects of modern surgery. Stream sterilized overalls, caps, masks and rubber gloves on doctors and nurses; perfectly sterilized instruments, operating tables, and theatres, took the place of the old germ-infected operating rooms, doctors in garments bloodstained from a hundred operations, instruments which carried bacteria from one patent’s festering wound to the next, and sponges which had been perfunctorily rinsed out in a little
warm water. In the wards too, if absolute scientific aseptic conditions were impossible, antiseptic ones were insisted upon.

Microbes, germs: these enemies of mankind had at last been discovered. By the quite persistence of the truth-seekers, working upstream against the flow of ancient prejudice, mankind has entered into new realms of health, and the borderlines of death have been pressed farther back.

Practice

Read the following. It describes an imaginary conversation between Simpson and Lister.

Simpson asked Lister how his ‘Spray and Gauze’ method could solve the problem of Hospitalism. Lister said that the use of an antiseptic such as carbolic created a barrier between the wound and the minute organisms which caused the trouble. Simpson called this nonsense and Lister then asked him how else the wounds could degenerate the way they did. Simpson pointed out that there might be gases in the air which caused by the decay of tissues. Lister asked if Simpson could produce any evidence for this theory. In reply, Simpson asked Lister to produce evidence for this theory of organisms. Lister inquired if Simpson had read about the experiments conducted by a French chemist called Pasteur. Simpson said that he had read them but did not see any connection between the fermentation of wine and blood-poisoning. Lister said that Pasteur’s findings contained a clue to his own problem and that he was going to prove his theory if only he could get a fair chance of doing so. Simpson said that Lister’s theory did not even deserve a trial. In reply, Lister asked if Simpson had forgotten how his own theory of anesthetics had been criticized unreasonably only a few years before.

Now rewrite the passage in the form of a dialogue whose beginning is given below:

Simpson: Mr. Lister, how can your ‘Spray and Gauze’ method solve the terrible problem of Hospitalism?

Lister: The use of an antiseptic such as carbolic creates a barrier between the wound and the minute organisms which cause the trouble.

Simpson: Nonsense!

Production
Here are some facts about four of the scientists mentioned in the essay:

<table>
<thead>
<tr>
<th>Scientist</th>
<th>Place of work</th>
<th>Problem</th>
<th>Findings</th>
<th>Result</th>
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<tbody>
<tr>
<td>Simpson (doctor)</td>
<td>Britain (Edinburgh)</td>
<td>How to make an operation painless for the patient</td>
<td>anesthetics</td>
<td>1. persecution for some time</td>
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<td>2. acceptance and praise</td>
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<td>Semmelweis (doctor)</td>
<td>Vienna (Maternity hospital)</td>
<td>How to stop septic conditions after childbirth</td>
<td>anti-septics</td>
<td>1. publication</td>
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<td>5. death</td>
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<td>Pasteur (doctor)</td>
<td>France</td>
<td>What caused fermentation in wine and beer</td>
<td>Minute organisms in dust-laden air</td>
<td>Supplied the final clue to Lister’s problem</td>
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<tr>
<td>Lister (doctor)</td>
<td>Britain (Glasgow)</td>
<td>How to stop infection of wounds</td>
<td>Microbes anti-septics(carbolic as a barrier)</td>
<td>1. persecution</td>
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<td>2. successful trail over nine months</td>
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<td>3. revolution in surgery</td>
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Here is a short paragraph, based on these facts, about Simpson. Study it and then write three more paragraphs on the other three scientists.

Simpson was a British doctor. He studied the problem of how to make a surgical operation painless for the patient. After a great deal of research, he discovered the use of anesthetics which made the patient unconscious of pain and thus gave the surgeon time to perform the operation properly. Simpson’s new method of surgery was criticized by traditional men, and Simpson was persecuted for a time. But he was soon able to prove the success of his method and the use of anesthetics was then generally accepted. Simpson was then praised for his contribution to surgery.

Lesson-8

Presentation

S1: How do you operate this machine?
S2: You turn the lever to the right.
S1: Do you turn it all the way to the right?
S2: No. You turn it to the first mark.
Now let’s learn the lesson entitled The karburator

The students are divided into different groups and they are asked to comprehend the lesson by way of communicating among themselves. The teacher will act as a facilitator in the learning process.

The karburator

‘I’ve been expecting you!’ Marek repeated, when he had seated his guest in a comfortable leather chair. Nothing on earth would have induced Bondy to own up to his vision of the fallen inventor. ‘Just fancy! He said, with a rather forced gaiety. ‘What a coincidence! It struck me only this very morning that we hadn’t seen each other for twenty years. Twenty years, Rudy, think of it!’ ‘Hm,’ said Marek. ‘And so you want to buy my invention.’ ‘Buy it?’ said G.H.Bondy hesitatingly. ‘I really don’t know….. I haven’t even given it a thought. I wanted to see you and- ‘oh, come, you needn’t pretend.’ Marek interrupted him. ‘I knew that you were coming. You’d be sure to, for a thing like this. This kind of invention is just in your line. There’s a lot to be done with it.’ He made an eloquent motion with his hand, coughed, and began again more deliberately. ‘The invention I am going to show you means a bigger revolution in technical methods than watt’s invention of the stream engine. To give you its nature briefly, it provides, putting it theoretically, for the complete utilization of atomic energy.’ Bondy concealed a yawn. ‘But tell me, what have you been doing all these twenty years?’ Marek glanced at him with some surprise. Modern science teachers that all matter – this is to say, it atoms- is composed of a vast number of units of energy. An atom is in reality a collection of electrons, i.e., of the tiniest particles of electricity.’

‘That’s tremendously interesting,’ Bondy broke in. ‘I was always weak in physics, you know. But you’re not looking well, Marek. By the way, how did you happen to come by this playth…..this, er…factory?’ ‘I? Oh, quite by accident. I invented a new kind of filament for electric bulbs….But that’s nothing; I only came upon it incidentally. You see, for twenty years, I’ve been working on the combustion of matter. Tell me yourself, Bondy, what is the greatest problem of modern industry?’ ‘Doing business,’ said Bondy. ‘And are you married yet?’ ‘I’m a widower,’ answered Marek leaping up excitedly. ‘No, business has nothing to do with it, I tell you. It’s combustion. The complete utilization of the heat-energy contained in matter! Just consider that we use hardly one hundred-thousandth of the heat that there is in
coal, and that could be extracted from it! Do you realize that?" ‘Yes, coal is terribly dear!’ said Mr. Bondy sapiently. Marek sat down and cried disgustedly. ‘Look here, if you haven’t come here about my Karburator, Bondy, you can go.’ ‘Go ahead, then, Bondy returned, anxious to conciliate him. Marek rested his hands, and after a struggle came out with, ‘For twenty years I’ve been working on it, and now-now, I’ll sell it to the first man who comes along! My magnificent dream! The greatest invention of all the ages! Seriously, Bondy, I tell you, it’s something really amazing?’

‘No doubt, in the present wretched state of affairs,’ assented Bondy. ‘No, without any qualification at all, amazing. Do you realize that it means the utilization of atomic energy without any residue whatever? ’ ‘Aha,’ said Bondy. ‘so we are going do our heating with atoms. Well, why not... you’ve got a nice place here, Rudy. Small and pleasant. How many hands do you employ?’ Marek took no notice. ‘You know,’ he said thoughtfully, ‘it’s all the same thing, whatever you call ‘it-the utilization of atomic energy, or the complete combustion of matter, or the disintegration of the matter. You can call it what you please.’ ‘I’m in favour of “combustion!” Said Mr. Bondy. It sounds more familiar.’ ‘But “disintegration” is more exact to break up the atoms into electrons, and harness the electrons and make them work. Do you understand that?’ ‘Perfectly,’ Bondy assured him. ‘The point to harness them!’ ‘Well, imagine, say, that there are two horses at the ends of a rope, pulling with all their might in opposite directions. Do you know what you have then?’ ‘Some kind of sport, I suppose,’ suggested Mr Bonday. ‘No, a state of repose. The horses pull, but they stay where they are. And if you were to cut the rope-’ ‘The horses would fall over,’ cried G.H.Bondy, with a flash of inspiration. ‘No, but they would start running; they would become energy released. Now, pay attention. Matter is a team in that very position. Cut the bonds that hold its electrons together, and they will...’ ‘Run loose!’ ‘Yes but we can catch and harness them, don’t you see? Or put it to yourself this way: we burn a piece of coal, say to produce heat. We do get a little heat from it, but we also get ashes, coal-gas, and soot. So we don’t lose the matter altogether, do we?’

‘No.-won’t you have a cigar?’ ‘No I won’t – but the matter which is left still contains a vast quantity of unused atomic energy. If we used up the whole of the atomic energy, we should use up the whole of the atoms. In short, the matter would vanish altogether.’ ‘Aha! Now I understand.’ ‘It’s just as though we were to grind corn badly—as if we ground up the thin outer husk and threw the rest away ashes. When the grinding is perfect, there’s nothing or next to nothing left of the grain, is there? In the same way, when there is perfect combustion, there’s nothing or next to nothing left of the matter we burn. It’s ground up completely. It is used up. It returns to its original nothingness. You know, it takes a tremendous amount of energy to make matter exit at all. Take away its existence, compel it not to be, and you thereby release an enormous supply of power. That’s how it is, Bondy.’ ‘Aha. That’s not bad.’ ‘Pfluger, for instance, calculates that one kilogramme of coal contains twenty three billons of calories. I think that Pfluger exaggerates.’ ‘Decidedly.’ ‘I have arrived at seven billions myself, theoretically. But even that signifies that one kilogramme of coal, if it underwent complete combustion, would run a good-sized factory for several hundred hours!’ ‘The devil it does! Cried Mr.Bondy, springing from his chair. ‘I can’t give you the exact number of hours. I’ve been burning half a kilogramme of coal for six weeks at a pressure of thirty kilogram-meters and, man alive,’ said the engineer in a whisper, turning pale, ‘it’s still going on....and on...and on.’ Bondy was embarrassed; he stroked his smooth round chin. ‘Listen, Marek,’ he began, hesitatingly. ‘you’re surely...er...a bit...er...overworked.’
Marek’s hand thrust the suggestion aside. ‘Not a bit of it. If you’d only get up physics a bit, I could give you an explanation of my Karburator in which the combustion the takes place. It involves a whole chapter of advanced physics you know. But you’ll see it downstairs in the cellar. I shoveled half a kilogramme of coal into the machine, then I shut it up and had it officially sealed in the presence of witnesses, so that no one could put any more coal in. Go and have a look at it for yourself—go on—go now! You won’t understand it, anyway, but—go down to the cellar! Go on down, man, I tell you!’ ‘Won’t you come with me?’ asked Bondy in astonishment. ‘No, you go alone. And...I say, Bondy.... Don’t stay down there long.’ ‘Why not?’ asked Bondy, growing a trifle suspicious. ‘Oh, nothing much. Only I’ve a notion that perhaps it’s not quite healthy down there. Turn on the light; the switch is just by the door. That noise down in the cellar doesn’t come from my machine. It works noiselessly, steadily, and without any smell... The roaring is only a... a ventilator. Well, now, you go on. I’ll wait here. Then you can tell me...’ Bondy went down the cellar steps, quite glad to be away from that madman for a while and rather worried as to the quickest means of getting out of the place altogether. Why, just look, the cellar had a huge thick reinforced door just like an armoured plate in a bank. And now let’s have a light. The switch was just by the door. And there in the middle of the arched concrete cellar, clean as a monastery cell lay a gigantic copper cylinder resting on cement supports. It was closed on all sides except at the top, where there was a grating bedecked with seals. In- side the machine all was darkness and silence. With a smooth and regular motion the cylinder thrust forth a piston which slowly rotated a heavy fly-wheel. That was all. Only the ventilator in the cellar window kept up a ceaseless rattle.

Perhaps it was the draught from the ventilator or something—but Mr. Bondy felt a peculiar breeze upon his brow, and an eerie sensation as though his hair were standing on end; and then it seemed as if he were being borne through boundless space; and then as though he were floating in the air without any sensation of his own weight. G. H. Bondy fell on his knees, lost in a bewildering, shinning ecstasy. He felt as if he must shout and sing, he seemed to hear about him the rustle of unceasing and innumerable wings. And suddenly someone seized him violently by the hand and dragged him from the cellar. It was Marek, wearing over his head a mask or a helmet like a diver’s and he hauled Bondy up the stairs. Up in the room he pulled off his metal head-covering and wiped away the sweat that soaked his brow. ‘Only just in time.’ He gasped, showing tremendous agitation.

Practice

When, in the course of their conversation, Marek said that his machine had been working for six weeks on just half a kilogramme of coal, Bondy ‘was embarrassed’. Why? What were Bondy’s thoughts then? Describe them in a paragraph. Use the following questions to guide you.’

1. What was Bondy’s general attitude towards Marek? (successful businessman/fallen inventor)
2. How did Bondy feel about it?
3. What it Marek talk about?
4. What did he try to do, repeatedly?
5. When was Bondy’s interest suddenly aroused?
6. What aroused it?
7. What it Marek say next?
8. What is Bondy decide now?
9. Did he express his thoughts?
10. Was that why he was embarrassed?

Your answer should be a continuous paragraph.

**Production**

Suppose that Bondy did not come to see Marek. He wrote a letter instead, as follows:

Dear Rudy,

It struck me this morning that we hadn’t seen each other for twenty years. How time flies! How are you? What have you been doing these twenty years? Are you married yet?

By the way, I happened to hear the other day that you had built a new kind of factory. I hope it is working well. Anything new is sure to be welcome in the present wretched state of affairs.

All the best,

G.H.B

How would Marek reply to this letter? Perhaps he would begin by saying that he had expected Bondy’s letter; then he would talk about the greatness of his invention ('bigger revolution than the steam engine', etc.) and go on to describe the scientific theory behind it, with examples (horses, corn). Finally he would describe the machine itself—what it looked like and how it had been working for six weeks on just a little coal.

Here is the beginning of Marek’s letter. Continue and complete it.

Dear Bondy,

I knew that you would write to me. You would be sure to, when you heard about my invention. You need not pretend that was not the main point of your letter. Perhaps you don’t quite realize how great this invention is. It is the...

**Lesson -9**

**Presentation**

**Gopu:** Sir, last night Anufo landed on our garden.

**Inspector:** Good heavens! It’s impossible to believe your words.

**Gopu:** Really! Aliens entered my house and they had taken away my wife.

**Inspector:** My god! what happened later?

**Gopu:** Oh! They got into the U.F.O and it had taken off again.

**Inspector:** How silly! You might have killed your wife.
Now let’s learn the lesson entitled Spaceship.

The students are divided into different groups and they are asked to comprehend the lesson by way of communicating among themselves. The teacher will act as a facilitator in the learning process.

Spaceship

It was one of those days when it looks at first as if nothing interesting can happen, but then later, when you don’t expect anything, almost everything happens. August is a good time for these peculiar days, and this one was in the middle of August. The Hooper’s — James, nearly-16, and Peg, 14, and Robin, 13 — were not at school of course, but for once they were having to stay at home. It was their parents who were away, having taken the car to France and Italy. Grandpa was here — to ‘look after them’, as the parents said, though Peg always felt it was they who were looking after him, though she also felt she did more of it than the two boys. Not that she minded, because she loved Grandpa, who was Professor Richard Hooper, who had taught history and now wrote books about it. He was writing one now, very long and very dull, about William Pitt and the Duke of Newcastle whoever they were. He was very old, over 70, and had lovely white hair and fab eyebrows but because smoked the pipe all the time he had rather too strong a smell of tobacco. Even so, though ancient, he always seemed to Peg closer to them than Daddy was. He wasn’t so busy and worried and he never talked about money. Then again, though he was writing his book in the room above theirs, at the back of the house, he never complained if they made a noise. Their playroom, which was quite big and entirely theirs, was on the ground floor, close to the kitchen and the back door of the house. All the furniture was badly worn and battered, but that was just right because they hadn’t to bother about it. The chief piece — and the most useful — was an enormous cupboard, jam-packed with all their old stuff — old toys, books they no longer read, tennis rackets with half the strings gone, all kinds of junk and muck. Another
good thing about this room of theirs was that you hadn’t even to pop across to the back door if you wanted to slip out, because on the other side it had those huge windows that open like doors, taking you straight on to the lawn—a super arrangement.

On this particular afternoon, not very long after they had eaten their cold meat and salad and summer pudding? These window—doors were wide open, but all three of them were still indoors. The storm wasn’t as bad as it had been—and there had been a lot of thunder and lightning—but it was still rolling and grumbling around. So there was no point in going out until it had really stopped. James, who was keen on tennis, was standing not far from the window, practicing his service, just swinging his racket and not using any balls. And being ridiculously solemn about it too. Robin was lolling as best he could on the lumpy wreck of a sofa, reading a book about astronomy or space travel or something of that sort. He was so Crosby about that stuff he was hardly on the earth at all except during mealtimes. Peg herself was sitting at the small table, facing the window but at the opposite end of the room, and was trying to write a poem, something she often did when she couldn’t go out. She wasn’t getting on very well. The thunder decided to start all over again, producing the sudden loud clap, so that she looked up and spoke to it sharply. ‘Oh—do shut up!’ ‘Nobody’s saying anything,’ said James between serves. ‘I mean that silly thunder. I want to concentrate.’ James went through a serve again. ‘Another poem?’ he asked in a teasing tone. Then, when Peg ignored him: ‘About wanting to be a tree again?’ ‘Now—you can shut up,’ Peg told him, not angrily though. She wanted to put an end to this talk because in fact this poem was about a tree, though not wanting to be it.

Concentration was difficult because the thunder went rolling round, even if it wasn’t very loud now, and there seemed to be several distant flashes of lightning. Robin was the next interrupter. Something he had just read had delighted him. ‘If you took a pinch of stuff from a White Dwarf it might weigh tons and tons. Oh boy!’ James was only half-listening but of course felt he had to say something. ‘How could pinching a dwarf weigh anything?’

‘Don’t be thick, Robin told him. ‘I didn’t say that. I said—are you listening?—’ ‘No’ ‘Neither am I,’ said Peg, though this wasn’t but she did wish they’d shut up. But once Robin was among the stars, he couldn’t be silenced. ‘A White Dwarf’, he began very deliberately, ‘is a small, old, and very very heavy star. And just pinch of it—a spoonful—could weigh tons and tons.’ This made him laugh, just because he adored it all. ‘One little bit of your fingernail would knock you flat. He laughed again. ‘It’s atoms haven’t any space in them—they’re all sort of mashed up together. Jolly good!’ This was too much for Peg. ‘What’s jolly good about it?’ ‘Hear, hear!’ Cried James, right in the middle of the serve. Robin was disgusted with them. ‘Okay—okay—okay—you’re not interested. Well, I am.’ He began reading again. And now because he wanted to be quite, James and Peg had to start teasing him. ‘A hundred million stars in our galaxy,’ said James, in a sing-song tone. Peg couldn’t resist joining in, using the same tone. ‘And millions and millions of galaxies.’ And then, sounding deeply disgusted: ‘Ugh!’ this pulled in Robin. ‘Ugh yourself!

It is a very big universe, that’s all.’ ‘It’s too big,’ said Peg. ‘It’s disgusting and frightening.’ ‘You only say that because it makes you feel like nothing—’ This annoyed Peg. ‘And you’re only on its side because you like astronomy and space travel and all that. Anyhow, I’m not nothing. I’m Peg Hooper, Laurel Lodge, Mitchling, Wiltshire, England, Earth.’ ‘Turn it up minute, Peg,’ said James. ‘Watch this service, both of you. Now then—Hooper to serve for the match. Watch! Slam, bang, wham! Another aceeh?’ Robin, who had looked up from his book to watch, was serious now. ‘No, James—
sorry—but that one would have gone straight into the net.’ ‘I don’t think so. Do you, Peg?’ she shook her head. ‘Honestly I don’t know—can’t tell.’ ‘Well, I can,’ said Robin, who probably could, too. ‘And I say it wouldn’t have got over the net because you’re not reaching high enough, James. But then it’s useless practicing your serve without a ball and a net.’ ‘It’s a lot of use—to get the right rhythm. But of course.’ James continued solemnly, as soon as it’s fine and the court’s dried off, then I’ll do my serve there. But I’ll try reaching a bit higher. Watch!’

This is when it really all began. There was first a strange whirring sound. Then there was a flicker of odd light in the sky, which Peg and Robin might not have noticed if they hadn’t been looking towards James and the window. ‘Ufo!’ cried Robin, bounding up from the sofa and then running outside. ‘Oh rats!’ James looked and sounded disgusted. ‘What’s the matter with him?’ Peg’s reply came rather uncertainly. ‘I don’t know, I don’t know, James. But there was something queer out there—a noise and a light—’ ‘It was just the end of the storm, that’s all.’ And James didn’t even bother to turn round and see where Robin was. Peg didn’t want to get into the middle of a quarrel between her brothers. Even so, she couldn’t entirely give into James. ‘I don’t think it was the end of the storm. The noise was different. So was the light.’ ‘Bilge!’ James was still disguised, perhaps because he wouldn’t go out to look and yet couldn’t go on with his serving. ‘Robin’s coming back, all het up.’ ‘More bilge now—’ ‘I think it was a Ufo,’ Robin announced, rather squeakily because he was excited. ‘A what?’ Peg really didn’t know what he was talking about. ‘Ufo. An unidentified flying Object.’ Robin was very grand about this. ‘You mean,’ said James, even deeper in disgust now, ‘one of those flying saucers people think they see? That’s out. Don’t be batty.’ ‘I’m not being batty—you are,’ Robin replied hotly. Then he was off. ‘because a lot of people have seen things that weren’t there—or weather balloons—or experimental planes they didn’t see properly, that doesn’t mean there couldn’t be a flying saucer—a spaceship.’ As the other too tried to interrupt ‘Oh—do shut up—and listen. I know a lot more about it than you two—’ He might have gone on about this, but he didn’t because at that moment Grandpa joined them. Looking at them about his spectacles, which were always sliding down his nose, Grandpa said mildly. ‘Well now, what’s happening here?’

Being the eldest, James replied. ‘I’m sorry if we disturbed you Grandpa.’ ‘It was my fault,’ said Robin, who apart from galaxies and spaceships and all that stuff was a fair-minded, good-hearted boy. ‘It was all of us,’ Peg declared, even though she didn’t believe she was to blame. But there wasn’t to be any blaming. ‘No, no, you didn’t disturb me. I’ve come down to ask a question. You see, instead of working on the elder William Pitt and the Duke of Newcastle, I was staring out of the window—a bad habit of mine. And then I heard a rather strange sound and saw a curious flash of light—’ ‘There you are, James!’ Robin almost shrieked. ‘wasn’t it just the end of the storm, Grandpa?’ ‘No I don’t think it was, you know, James. Something quite different.’ And Grandpa took out his pipe, looked at it as if it might turn into something else, and then said slowly, ‘Quite different’. ‘Yes it was’. This was peg, who didn’t like to be left out. ‘All right then’, Grandpa, said James, ‘but now Robin’s off about flying saucers and spaceships—'

‘And the next thing’ cried peg ‘it’ll be millions and millions of stars again—billions and billions of miles of empty space—and all that. And Robin knows I hate it.’ Grandpa gave her one of his slow grins. ‘I’m not very fond of it myself. Cheerless, I always feel. But Robin, perhaps because he’s the youngest of us, seems to belong to the space age. Your turn then Robin.’ ‘Okay—and thanks, Grandpa! Now didn’t you agree the other night that spaceships might have landed here, before there were so many people, and then
taken off again? And Robin gave him an appealing look. ‘You did, didn’t you?’ being so old and having been a professor for so long. Grandpa answered this kind of question very cautiously. ‘Well, I did say it wasn’t impossible, even though most of the evidence would be against it. The immense distances—and so forth. And there’s something else I pointed out. If creatures on some other planet were clever enough to be able to pay us a visit, they’d probably be clever enough to know we aren’t worth visiting.’ Peg gave him a reproachful look. ‘Oh—Grandpa—aren’t we?’

‘Speaking as an old historian, my dear, I doubt if we are. If these clever advanced creatures put it to me, I’m afraid I’d have to advise them to stay away.’ ‘There you are, Robin,’ said James. But Robin refused to be there, wherever it was. ‘But they might land here by accident—or to refuel or something—or send back a report on the earth’s surface. Just the way we do—with Mars and Venus—only much better, landing a big spaceship, coming from another part of the galaxy—’ ‘Robin, please.’ Cried Peg. ‘Don’t start that all over again. Grandpa, tell him not to, I mean, things with eyes and a lot of what’s it—tentacles. Sooner or later I’ll begin dreaming about them.’ Grandpa was re-lighting his pipe, something he was always doing, but he managed to make some sort of noise that stopped the boys from breaking in. ‘No, we won’t have any monsters, Peg. And I don’t purpose to accept your spaceship, Robin. But at the same time—and this is why I came down—I can’t help feeling that something very odd, very unusual indeed, happened—and not very far away. Being upstairs, I must have been more aware of it than you were.’

Robin was all eagerness. ‘Yes of course, Grandpa. So what did you see?’ This made Grandpa careful again. He made use of his pipe very cleverly. ‘Nothing clearly.’ Puff, puff, puff. ‘There was this flashing light—a bluely-green, I’d say.’ Puff, puff. ‘And I did get the impression that something I couldn’t see properly at all came down’—puff, puff—’ and then perhaps hovered a little before it vanished.’ ‘Spaceship’ And Robin announced this as if the thing was waiting to come into the room. ‘But then I may have been deceiving myself,’ Grandpa told him. ‘We’re always deceiving ourselves. History is largely a record of self-deception.’

Practice

a. Observe the following sentences:

It was an afternoon in August. The children had eaten their lunch. They were now waiting for the storm to stop.

The first sentence refers to a particular time in the past. Its verb (‘was’) is in the past simple tense. The second sentence refers to something that occurred before the time which we have in mind. Its verb (‘had eaten’) is in the past perfect tense. The third sentence refers to a continuous activity during that time, and its verb (‘were waiting’) is in the past continuous tense. Make similar sentences with the help of the hints given below:

a. The weather prevented them from going out. There ... (be) a storm. It ... (be) still...

b. Grandpa worked in a room above theirs. He ... (be) a professor of history. Now ... (write) a book on William Pitt.

c. James was keen on tennis. The train...(make) the tennis court unfit for use. He...now (practice)...

d. Robin was crazy about astronomy and space travel. He... (read)...on the subject. He...a new book on the subject now.

c. Peg sometimes tried to write poems. She... (Write)...about wanting to be a tree a few days before. She... (try)...about a tree again now

b. **Next observe these sentences:**
   1. Robin and Peg looked out of the window for some time. During that time, a strange flash of light suddenly appeared in the sky.
   2. While Robin and Peg were looking out of the window, a strange flash of light suddenly appeared in the sky.
   3. Robin and Peg were looking out of the window when a strange flash of light suddenly appeared in the sky.

   In the (b) and (c), the past continuous tense (‘were looking out’) is used to describe an action which was going on when some other event (‘appeared’) took place. This is a common use of the past continuous tense.

   **Here are some sentences like (a). Rewrite them in the form of (b) and (c).**

   1. a. The children argued about the flash and sound for some time. During that time, Grandpa came into the room.

   b. (While...were arguing...Grandpa came...)

   c. (The children...when Grandpa came...)

   2. a. Robin and Peg teased each other about their particular interests for a little while. During that time James asked Peg to watch his next serve.

   b. (While...were...James...)

   c. (Robin and Peg...when James...)

   3. a. Peg tried to concentrate on her poem for some time. During that time, there was a loud clap of thunder.

   b. (While...trying...there)

   c. (Peg...when...)

   4. a. James and Peg discussed the strange sound and light for a few minutes. During that time, Robin came back, all excited.

   b. (...the strange sound and light,...all excited.)

   c. (...when...)

   5. a. Peg wondered for some time what the sound and light could mean. During that time, Robin announced that it was a UFO.

   b. (...wondering what the...could mean, Robin...)

**Production**

a) Suppose the children wrote regular letters to their parents, who were away in France at the time what would each of them write about the strange sight?
Here is the beginning of a letter by Peg. Continue and complete it, using the hints given. Begin by completing the address and date at the top.

Laurel Lodge,

........................

........................

........................

15th ..................1970

Dear Mum and Dad,

What do you think happened yesterday? We saw something strange in the sky—there was an odd whirring sound and a flicker of unusual light. That’s what Robin and I saw but Grandpa, who happened to watch it from upstairs, says he saw something come down and hover a bit before it vanished. Then we all had a great argument (yes, Grandpa joined in too) about what it could have been.

Perhaps I’d better explain how it all happened. It was one of those days when.....we’d eaten our...but couldn’t go out because.....James was...and Robin... I myself...we were all fed up with staying indoors and were trying to get some fun out of teasing each other about our interests. In the middle of it, James asked us to watch his serve and when Robin and I looked towards the window to watch him, we suddenly saw this strange... Robin claimed ...but James declared...then Grandpa...

When are you coming back?

Love,

Peg

c. Next image that Grandpa decided to write about this incident to a friend of his, Dr. Michael Smith, who was a retired professor of astronomy. He would perhaps write two paragraphs, the first one describing what he actually saw, and the second expressing his views on the theory that it was a spaceship. Use the following hints to compose such a letter.

Remember to use the kind of language that an elderly professor would use (you can use Grandpa’s own words and expressions in the story), not the language of young people which Peg used in her letter. Remember also to fill in all the details at the beginning and end of the letter.

........................

........................

........................

15th .............

........................
Professor of Astronomy (retired)
University of Camford,
Oxbridgeshire.

Dear Michael,

I thought you might be interested to hear about a curious phenomenon which I observed, quite by accident, from my son's house in Mitchling, at about three o'clock yesterday afternoon. I was in my room at the time, trying to add a further chapter to my book on... However, instead of working... and then I heard... I considered the possibility that it might have been just the end of the storm, but... Of course I cannot say I saw it clearly, but being in an upstairs room, I did have a fairly good view of it. There was a flashing light... Altogether, I could not help feeling...

Now my grandson Robin, perhaps because he is the youngest of us... He seems to have reached the firm conclusion that it was an Unidentified Flying Object. I suppose some professional astronomers would be prepared to make the same claim, if they saw the phenomenon, I myself would not say that was impossible, although...

I hope you are making good progress on your new book on the physical composition of Mars.

...............  

Richard

Lesson-10

Presentation

S1: Once there was a dispute between the priests about the exact number of teeth in the mouth of horse.

S2: What a ridiculous dispute!

S1: Yeah, Everyone referred to different books and scriptures.

S2: Well. What happened later?

S1: They concluded that it is impossible to tell the exact number of teeth in the mouth of a horse.

S2: Oh, how foolish they are! Instead, they could have opened the mouth of a horse and counted its teeth!
Now let's learn the lesson entitled How to Avoid Foolish Opinions.

The students are divided into different groups and they are asked to comprehend the lesson by way of communicating among themselves. The teacher will act as a facilitator in the learning process.

How to Avoid Foolish Opinions

To avoid the various foolish opinions to which mankind in prone, no superhuman genius is required. A few simple rules will keep you, not from all error, but from silly error. If the matter is one that can be settled by observation, make the observation yourself. Aristotle could have avoided the mistake of thinking that women have fewer teeth than men, by the simple device of asking Mrs. Aristotle to keep her mouth open while he counted. He did not do so because he thought he knew. Thinking that you know when in fact you don’t is a fatal mistake, to which we are all prone. I believe myself that hedgehogs eat black beetles, because I have been told that they do; but if I were writing a book on the habits of hedgehogs, I should not commit myself until I had seen one enjoying this unappetizing diet. Aristotle, however, was less cautious. Ancient and medieval authors knew all about unicorns and salamanders; not one of them thought it necessary to avoid dogmatic statements about them because he had never seen one of them.

Many matters, however, are less easily brought to the test of experience. If, like most of mankind, you have passionate convictions on many such matters, there are ways in which you can make yourself aware of your own bias. If an opinion contrary to your own makes you angry, that is a sign that you are subconsciously aware of having no good reason for thinking as you do. If someone maintains that two and two are five, are that Iceland is on the equator, you feel pity rather than anger, unless you know so little of arithmetic or geography that his opinion shakes your own contrary conviction. The most savage controversies are those about matters as to which there is no good evidence either way. Persecution is used in theology, are not in arithmetic, because in arithmetic there is knowledge, but in theology there is only opinion. So whenever you find yourself getting angry about a difference of opinion, be on your guard; you will probably find, on examination, that your belief is going beyond what the evidence warrants.

A good way of riding yourself of certain kinds of dogmatism is to become aware of opinions held in social circles different from our own. When I was young, I lived much outside my own country—in France, Germany, Italy, and the United States. I found this very profitable in diminishing the intensity of insular prejudice. If you cannot travel, seek out people with whom you disagree, and read a newspaper belonging to a party that is not yours. If the people and the newspaper seem mad, perverse, and wicked, remind yourself that you
seem so to them. In this opinion both parties may be right, but they cannot both be wrong. This reflection should generate a certain caution.

For those who have enough psychological imagination, it is a good plan to imagine an argument with a person having a different bias. This has one advantage, and only one, as compared with actual conversation with opponents; this one advantage is that the method is not subject to the same limitations of time and space. Mahatma Gandhi deplored railways and steamboats and machinery; he would have liked to undo the whole of the industrial revolution. You may never have an opportunity of actually meeting any one who holds this opinion, because in western countries most people take the advantages of modern technique for granted. But if you want to make sure that you are right in agreeing with the prevailing opinion, you will find it a good plan to test the arguments that occur to you by considering what Gandhi might have said in refutation of them. I have sometimes been led actually to change my mind as a result of this kind of imaginary dialogue, and, short of this, I have frequently found myself growing less dogmatic and cocksure through realizing the possible reasonableness of a hypothetical opponent.

Be very wary of opinions that flatter your self-esteem. Both men and women, nine times out of ten, are firmly convinced of the superior excellence of their own sex. There is abundant evidence on both sides. If you are a man, you can point out that most poets and men of science are male; if you are woman, you can retort that so are most criminals. The question is inherently insoluble, but self-esteem conceals this from most people. We are all, whatever part of the world we come from, persuaded that our own nation is superior to all others. Seeing that each nation has its characteristic merits and demerits, we adjust our standard of values so as to make out that the merits possessed by our nation are the really important ones, while its demerits are comparatively trivial. Here, again, the rational man will admit that the question is one to which there is no demonstrably right answer. It is more difficult to deal with the self-esteem of man as man, because we cannot argue out the matter with some non-human mind. The only way I know of dealing with this general human conceit is to remind ourselves that man is a brief episode in the life of a small planet in a little corner of the universe, and that for aught we know, other parts of the cosmos many contain beings as superior to ourselves as we are to jelly-fish.

Practice

In order to summarize a given passage, we first have to make an analysis of what it contains. We have to find the main points and examples, understand how the examples illustrate the points concerned, and see how the points themselves are connected with one another. Without such an analysis, we cannot hope to make a good summary; but once we have such an analysis. We can make a summary of any length—a hundred words, two hundred words, and so on.

Suppose we want a 50-word summary of Russell's essay. What can we put into it? There is the general statement in the first paragraph, and the five 'simple rules', with examples. (See questions 1, 2 and 4 under comprehension—1.) We haven't got space for any of the examples. We cannot even state all the rules, since that would take more than fifty words. So let us just make the general statement and mention one or two rules, as examples of the kind of rules proposed;

Russell describes a few 'simple rules' which can help people to avoid holding foolish opinions. Some of these are simple, for instance, making one's own observations before
starting anything definitely. Others, however, are more difficult, for instance, imagining a
debate with someone who believes in the opposite point of view.

Suppose now that we need a 100-word summary. What can we add to this? We can
state all the five rules, in about a sentence each, but we still have no room for Russell’s
examples:

Russell describes five ‘simple rules’ which will help us avoid foolish opinions—at
least the sillier ones. First, we should make a physical observation of facts, wherever
possible. Secondly, we should see if a different opinion makes us angry; if so, we have reason
to re-examine our own opinions. Thirdly, we should get to know other countries and other
kinds of people. That will help us to avoid dogmatism. Fourthly, when we are unable to meet
people with a different opinion, we can imagine a dialogue with them. Lastly, we should be
wary of any opinion flattering to our self-esteem.

Suppose, next, that we have 200-words to write a summary in. what do we do? We
select three or four Russell’s examples (we still have no room for all of them) and include
them in the appropriate places. Also, the third rule has not been made very clear in the 100-
word summary. It can therefore be expanded a little more. Now write a 200-word summary,
using these suggestions.

Production

Do you know anyone who holds foolish opinions of the kind described by Russell? Think of
as many foolish opinions as you can; then describe them in a short essay, pointing out at the
same time the kind of rules that can help us to avoid them. Organize your material before you
start writing; jot down a detailed plan. Then make a rough draft of the essay itself and revise
it as necessary.
Appendix-B

Testing speaking skills

1. If you were the Prime Minister of India, what would you do to mitigate the sufferings of our country men? Imagine and speak.

2. What would you like to become? Do you want to be a doctor, engineer, teacher, politician, or an IAS officer? What is your personal desire?

3. Your friend is not attending classes punctually. He gets only poor marks in all subjects. He never worries about healthy habits. Moreover he has developed inferiority complex. How would you give suggestions to rectify his way of life?

4. You have got an appointment as a teacher in a remote village in Uttar Pradesh. You meet a gentleman from Uttar Pradesh accidentally. What are the questions you would like to put forward and how would you get clarified?

5. Using the hints given below, you have to deliver a speech on ‘Happiness’.
   Smelling the chicken cooking—hearing drum music—hearing a disco song—smelling very beautiful flowers—seeing my national flag on red fort in Delhi—smelling a beautiful pink rose—visiting a zoo—drawing pictures—tasting a mango—smelling mango which is ripe—looking at the sunrise at kanyakumari—travelling by aeroplane—swimming in the tank—listening to smart sparrows—enjoying lots of ice cream—listening to the jokes of friends—getting gifts from relatives—playing cricket.

6. Complete the story after reading the beginning:
   Once upon a time a child was suffering from stomach ache during midnight in a small village. The father of the child said, “I will go to the town and buy medicine for the child”. He went out. But he did not return.
Testing writing skills

1. You want to join Indian army as a soldier. You meet a retired army officer. How can you get the required information from him so as to help you to join the armed forces? Write down the questions and the expected answers.

2. Suppose you’ve been bound by an amiable burglar, who is chatting to you while putting all your valuables into his hold-all. Write down the conversation in which you appeal to him to leave the valuable things and quit the house.

3. Your grandfather taught you the language, played with you and shared his personal experience with you. When he died, how did you feel? Write your personal experience in about a page.

4. Imagine that you are left alone in a hilly forest region, while it is raining heavily. How would you try to save your life?

5. Read the following dialogue:

Barbara and Harry Sallis are trying to buy a house. Here they are looking at the house for which they have paid a deposit. The mood is surprise.

Barbara: This can’t be the house!
Harry: Good heavens! It’s a most peculiar place!
Barbara: Look at the carving over the fireplace.
Harry: Looks Chinese.
Barbara: Weird! There’s mixture of everything.
Harry: And how could anyone live in a house like this!
Barbara: I’ve never seen anything like it.
Man: Good afternoon.
Barbara: Oh... hello!
Man: Who are you? I’m the caretaker.
Harry: I think we’ve come to the wrong house.
Man: The wrong house?
Barbara: Yes... by mistake.
Man: Well! I’d have thought it was difficult to mistake this house.
Harry: Yes... it is an extraordinary place. Who built it?
Man: A pirate.
Harry: A pirate?
Barbara: Really! How astonishing!
Man: He was most artistic.
Barbara: What! Who'd have thought of a pirate being artistic?
Man: He stole only works of art.
Harry: Did they catch him?
Man: Yes. In the end he was hanged.
Barbara: Oh, no!
Man: For murder.
Barbara: Murder!
Man: The house has been empty all these years, and now it's being sold.
Harry: Who on earth would want to buy an extraordinary place like this?
Man: To a couple called- let me think- Sallis, I believe.
Harry: Sallis?
Barbara: Sallis?
Harry: But ... but that's us!
Man: You?
Harry: You must've got the wrong name.
Barbara: This isn't the house we're buying. Harry, we've come to the wrong place.
Harry: We're buying a Georgian house, in Butterfield Lane, near Mamesby.
Man: This is Butterfield Lane, near Mamesby.
Harry: The house agents must've made a mistake, dear.
Barbara: Surely not!
Harry: I wouldn't have thought so, but they must have.
Man: Well, I never!

Suppose you are the caretaker in conversation with the Sallies and after they have gone, you are expected to write a letter to the house agent and tell him what has happened. Now, write down the letter.

6. Write down the paraphrase of the poem with the blanks, guessing the words which have been dropped.
A Wish

Mine be a cot beside the----------;
A bee-lives' ---------shall soothe my ear;
A willowy brook that turns a mill,
With many a fall shall linger----------.

The ---------, oft, beneath my thatch
Shall twitter from her clay built nest;
Oft shall the pilgrim left the ----,
And share my meal, a welcome----------.
Around my ivied porch shall spring
Each fragrant---------that drinks the--------;
And Lucy, at her wheel, shall--------
In russet gown and apron blue.

The village-church among the trees,
Where first our marriage-vows were given
With merry peals shall swell the--------
And point with tape spire to--------.
### APPENDIX –C
Experimental Group Scores

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APPENDIX -E
Control Group Scores

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