

中学生趣味英语阅读丛书

长风 编译

# 光电热奇观



中国广播电视出版社

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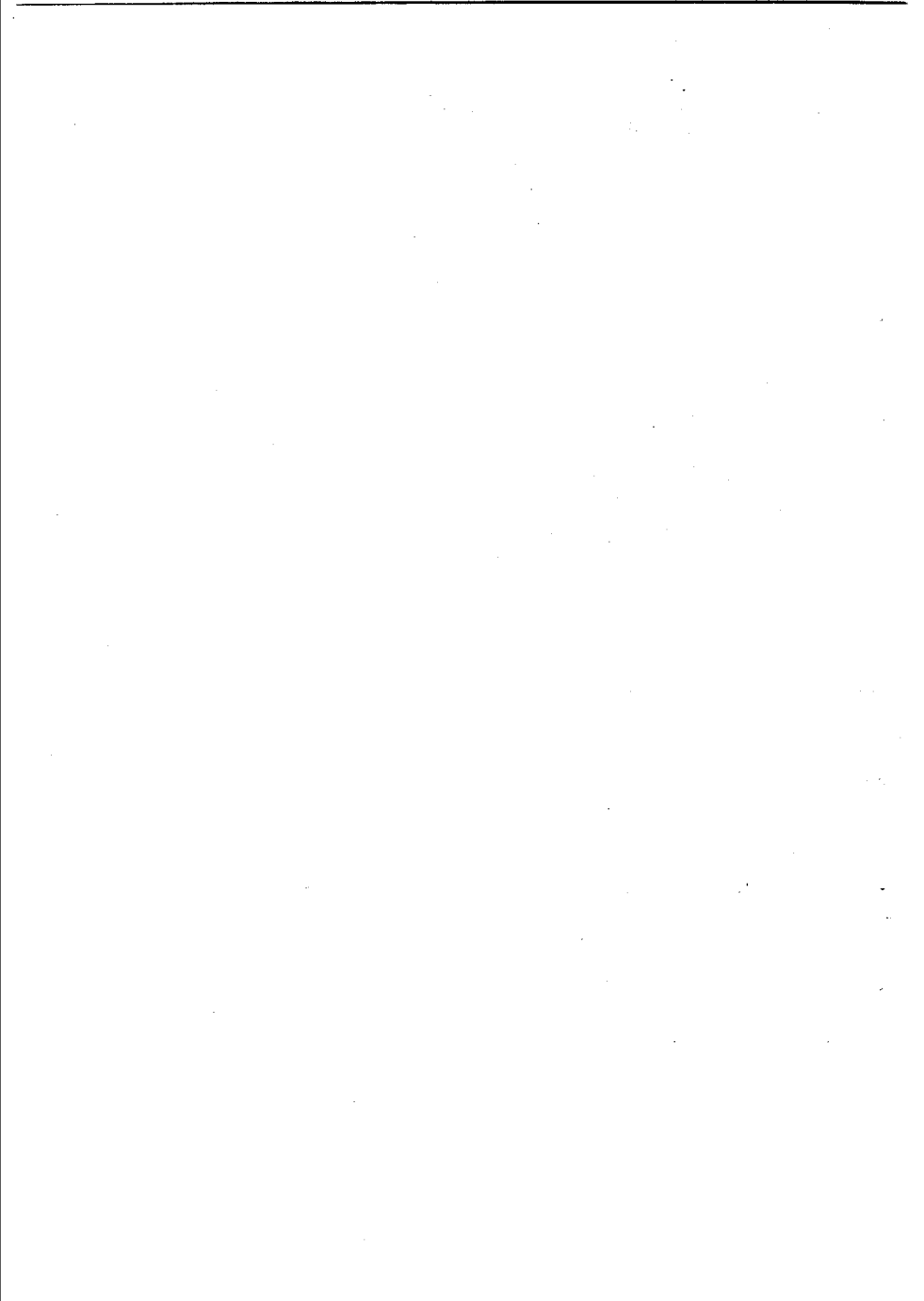
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**LIGHT**



## INTRODUCTION

Blindfold yourself and try to move around in the classroom. Will you be able to do this? You will probably fall over a chair or walk into the wall. You feel helpless when you try to move about in the dark. Now do you see how important light is? Close your eyes and think about what it would be like to live in a world where there is no light.

With the help of a magnifying glass you can make use of light from the sun to light a match or burn a piece of paper. This shows that light is a form of energy.

## HOW LIGHT TRAVELS

How does light travel? Does it travel in a straight line? Or does it travel like water, flowing around objects blocking its path? We can find this

out very easily.

### Things to Do

Cut three pieces of cardboard A, B and C. Each piece should be about 25 cm square. Draw diagonals on each of the square cardboards. At the point where the diagonals on each cardboard cut, make a very small hole with a pin. Now fix each piece of cardboard on a wooden stand and place it on a table. Place the pieces as shown in the picture. Pass a string straight through the holes. Pull the string taut so that the holes are all in a straight line. Place a lighted candle near the hole in cardboard C. Look through the hole in cardboard A.

Can you see the candle-light?

Move cardboard A so that its hole is not in line with those of B and

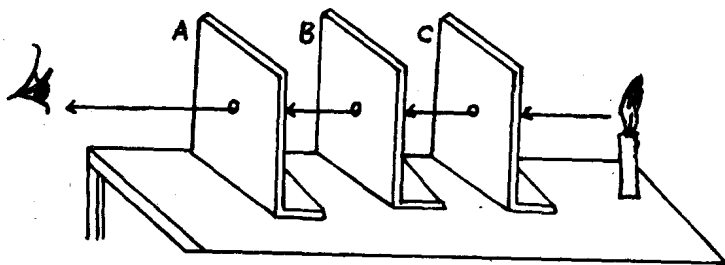
C . Again , look through the hole at A.

Can you see the light of the candle? Why?

This shows that light travels in a straight line.

When the three holes were in line, light passed through them to your eye. When the holes were not in line, light passing through the hole in C could go through the hole in B. But this light could not bend to go through the hole in A.

**To show that light travels in a straight line**



## HOW LIGHT BEHAVES

Light travels in a straight line at 300,000,000 metres per second. It will go on travelling at this speed until something comes into its way. When this happens, part or all of the light may be **reflected**, **absorbed** or **transmitted** by the **object** that comes into its way.

Throw a tennis ball on the floor. The ball bounces back. In the same way, when light falls on certain things it bounces back. When this happens, the light is said to be **reflected**. This can be clearly shown when you shine a beam of light from a torch at a mirror in a dark room.

Some objects do not allow light to go through them. If light is not completely reflected by the object, some light is said to be **absorbed**. Things that do not allow light to pass through are said to be **opaque**.

If light goes right through an object, the light is said to be **transmitted**. Objects which transmit

light are said to be **transparent**. Glass is transparent. Do you know of other transparent objects?

You have learned that light can travel through air. Now let us see whether it can travel through water.

### **Things to Do**

You will need a piece of cardboard with a hole in the centre. The hole should be large enough for a pencil to go through. Next, with a mirror, reflect sunlight in such a way that the sunlight goes through the hole in the cardboard. Let the spot of sunlight fall on a book, on the wall, on the ground or on your clothes.

Look at the spot of sunlight. The sunlight first fell on the mirror. The mirror reflected the sunlight which passed through the hole in the cardboard. It fell on your book as a spot of

sunlight.

Now place a jar of clear water between the cardboard and the spot of sunlight. Can the sunlight pass through the jar of water? Now place some chalk dust in the jar of water so that the water turns chalky. Can the sunlight pass through the chalky water?

## SHADOWS

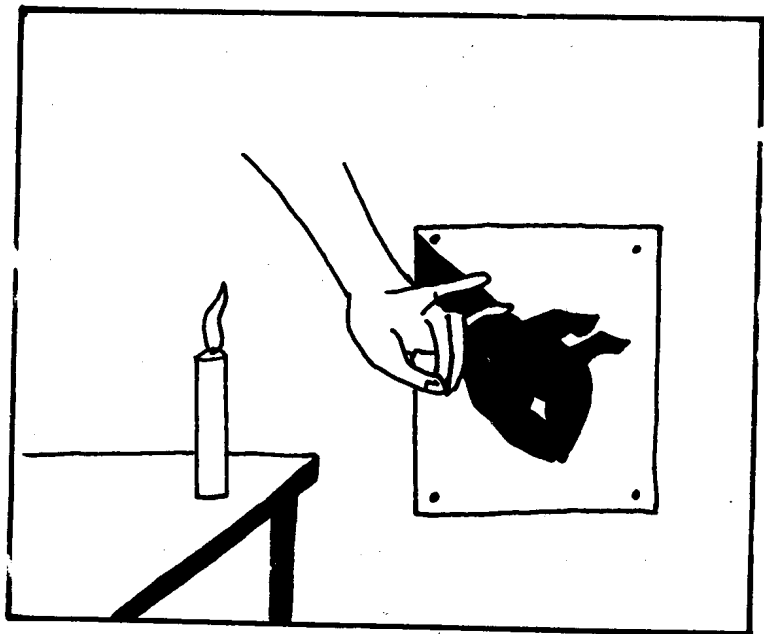
We can see many shadows of objects all around us. Do you know how shadows are formed?

Let us find out.

### Things to Do

You can do this in a dark room or you can do it at night. Place a lighted candle on a table and fix a white cardboard on a wall about one metre away from the candle.





### **Making shadows with a candle**

Now bring your fingers between the candle and the cardboard. Move your fingers about. What do you see on the cardboard? Instead of using hands, use other opaque objects such as shapes cut out from cardboard pieces.

Hold the object in a fixed place. Move