CHAPTER TEN

LIGHT AND SOUND ENERGY

Light Energy:

- This is the form of energy which enables us to see.
- We see objects because light energy from these objects travels to our eyes.
- Light travels in a straight line.
- Objects such as the sun, which can produce and give off their own light are called luminous objects.
- But those which cannot produce and give off their own light,are called non-luminous objects.
- A material is said to be transparent if light can pass through it and we can see through it. A material through which light cannot pass through is said to be opaque.
- A material is said to be translucent if light can pass through it, even though we cannot see through it.

Sources of Light:

The sources of light can be divided into two main groups, and these are:

1. Natural sources.
2. Artificial sources.

Natural sources of light:

- The sun is the main as well as the most important source of natural light
- Another source of natural light are the stars.

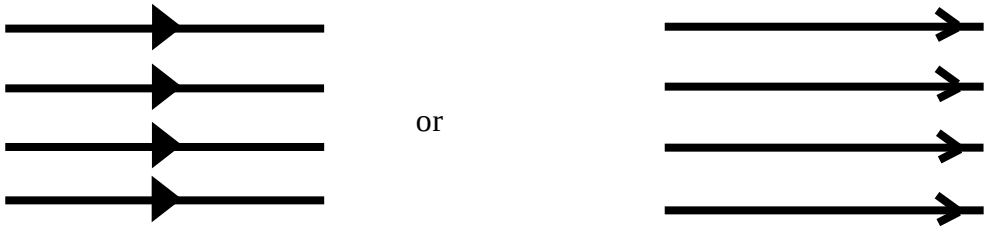
Artificial sources of light:

- These are those sources which enable us to see and do things we cannot do, when natural light is not available.
- Common examples of artificial light include the electric bulb, the candle and the low energy bulb.

Rectilinear propagation of light:

- A ray is the direction of path along which light travels, and it is represented by an arrow.
- A ray can be represented by

- A beam refers to a group of rays, and can be represented by a number of rays such as

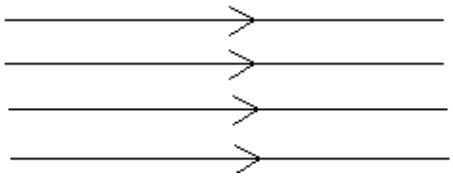


Light always travels in a straight line, and the ability of light to travel in a straight line is known as the rectilinear propagation of light.

Types of beams:

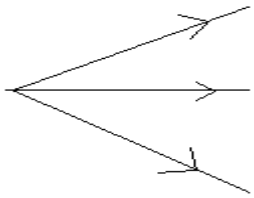
- There are three types of beams and these are

(1) Parallel beam:



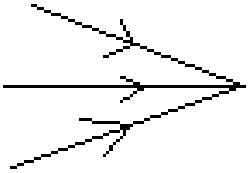
- This is the type of beam in which the rays move parallel to each other and never meet.

(2) Diverging beam:



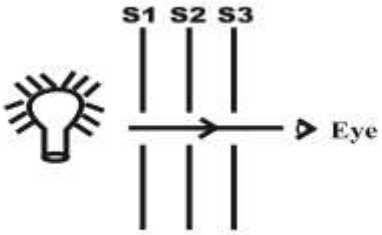
- This is the type in which the rays spread out or diverge from a point.

(3) Converging beam:



- In this type, the rays of the beam seems to meet or converge at a point.

Experiment to show that light travels in straight line:



- Three cardboard screens S1, S2 and S3 with small holes in each are arranged in such a way that their holes fall or are in a straight line.
- A source of light is then placed in front of the first cardboard, and it will be noticed that the light can be seen by the eye, at the other side after passing these holes.
- If any one of these screens is moved slightly out of line, the eye can no longer see the light.
- This shows that the light can only be seen when the holes are in a straight line.
- This shows that light travels in straight line.

Shadows:

- A shadow is formed when an opaque object is placed in the path of light.
- The two types of shadows which can be formed are the umbra and the penumbra
- The umbra which is made up of a dark region receives no light at all from the source of light, but the penumbra receives a certain amount of light.