1- ITEM

SUN, MOON, AND EARTH APPARATUS.

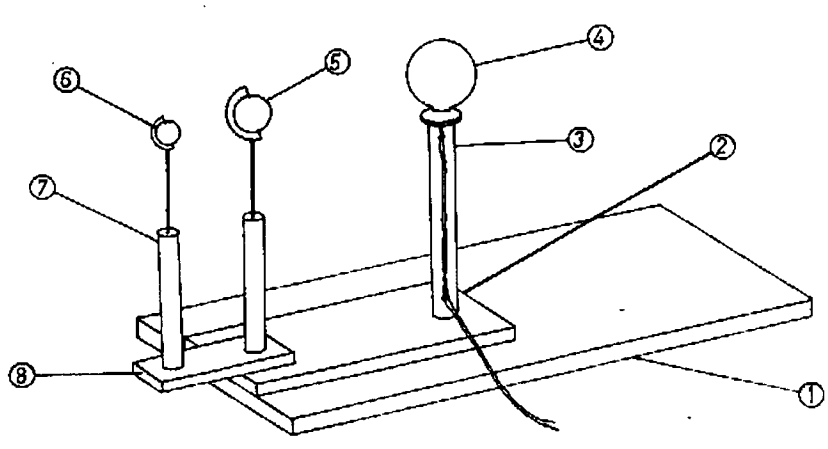
2.-PURPOSE

To demonstrate the Earth revolving around the Sun and the Moon revolving around the Earth.

3- INFORMATION SUBMITTED BY

Pedagogical Academy, Nicosia, Cyprus.

4- LINE DRAWING OF PROTOTYPE



5- MATERIALS FOR CONSTRUCTION

Components	Qty	Materials Required	Dimensions
1 Base.	1	Wood.	1000mmn x 200mm x10mm
2. Movable Arm (1)	1	Wood.	400mm x 100mm x 10 mm
3. Support Rod.	1	Wood.	350mm x 20mm dia
4.Sun.	1	Bulb and bulb holder and white globe (150mm dia).	
5. Earth	1	Wooden Ball.	approx. 50mm dia.
6. Moon	1	Wooden Ball	approx. 20mm dia
7. Support Rods.	2	Wood (ad iron wire)	250mm x 10mm dia
8. Movable Arm (2)	1	Wood	150mm x 80mm x 10mm
		Adhesive	
		Electric cable	approx. 1 metre
		Stiff metal wire	
		Tools: Woodsaw, drill and drill bits; long nosed pliers.	

6- CONSTRUCTION DETAILS

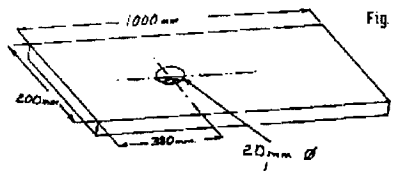


Fig. 1.

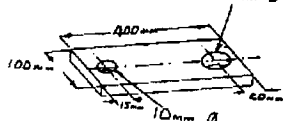


Fig. 2.

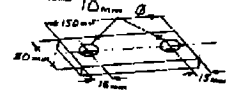


Fig. 3.

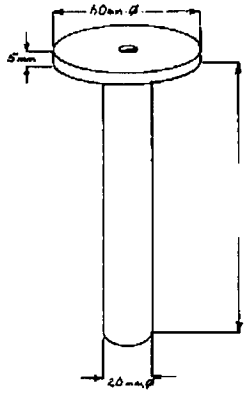


Fig. 4.

Fig. 1.
From a sheet of 10mm thick plywood construct the base as shown in Fig. 1.The support rod should be a tight fit in the 20mm dia. hole.

Fig 2.
From the 10mm plywood sheet cut the movable arm as shown in Fig. 2.
The support rod should be on easy fit into the 20mm dia. hole. The support

Fig. 3.
From the 10mm plywood sheet cut the smaller movable arm as shown in Fig. 3. The earth support rod should be an easy fit in one of the 10mm dia. holes. The moon support rod should be a tight fit in the other.

Fig. 4.
Construct the support rod for the Sun as shown in Fig. 4. Use a screw to fix the disc to the rod as indicated.

Connect a length of electrical cable to the lamp holder ready for final assembly.

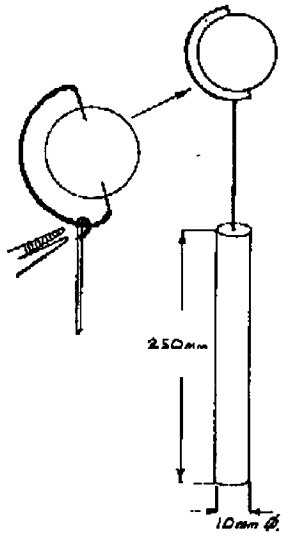


Fig. 5.

From a place of 10mm dia wooden doweling cut two places each 250mm long. Drill a smell hole in the end for inserting metal wire available. Drill two mail holes diagonally opposite each other in the two wooden bails to be used as the Earth and the Moon. Bend a suitable length of wire as in Fig. 5 to act as the axis and support f or the balls. Make one for each ball. Take a straight length of stiff wire and bend one end over the ball support as in the sketch. Crimp this loop tightly over the support using long nose pliers, (this joint could be soldered if steel or copper wire is used). Leave the length of straight wire uncut until final assembly. Assemble the apparatus by gluing the support for the Sun in the hole in the base. Slide moveable arm (i) over the support and ensure that it will rotate. Screw lamp support disc to the top of the column and then fix the 1amp holder to this disc

Glue Earth support rod into the 10mm hole in the moveable arm (1). Slide moveable arm (2) over this column and ensure that it will rotate. Glue support rod for Moon in second hole. Finally insert Earth and Moon assemblies into respective supports. (Ensure that the centres of the Sun, Earth end Moon are all in the same horizontal plane).

7- METHOD OF USE

Switch on the lamp and demonstrate the rotation of the Earth around the Sun; the Moon around the Earth, or the Earth around its own axis.

8- COMMENTS

1- ITEM

LAW OF REFLECTION APPARATUS.

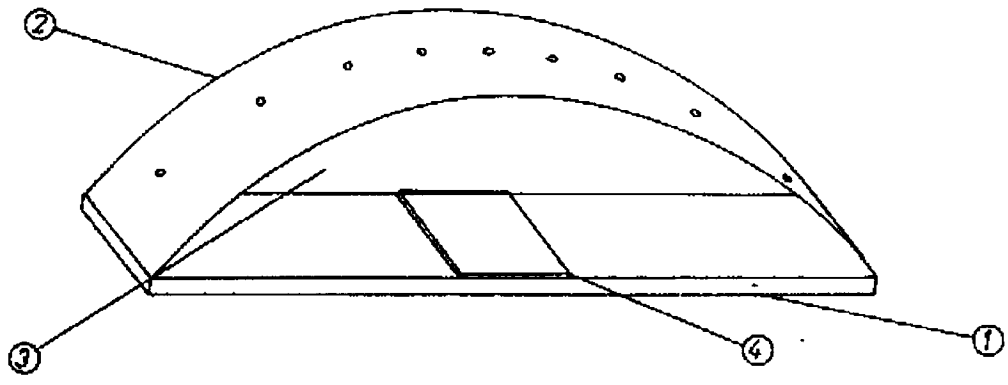
2.-PURPOSE

To investigate the relationship between the angles of incidence and reflection.

3- INFORMATION SUBMITTED BY

Pedagogical Academy, Nicosia, Cyprus.

4- LINE DRAWING OF PROTOTYPE



5- MATERIALS FOR CONSTRUCTION

Components	Qty	Materials Required	Dimensions
1 Base.	1	Wood.	400mmn x 100mm x10mm approx. 650mm long.
2. Cover.	1	Cardboard.	
3. Back Plate.	1	Cardboard	approx. 400mm dia
4. Mirror	1	Mirror.	approx 100mm x 60mm
		Drawing pins.	
		Adhesive.	
		Tools: Woodsaw, scissors.	

6- CONSTRUCTION DETAILS

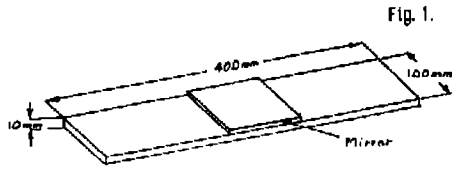


Fig. 1.

Fig. 1
Construct the base from a piece of 10mm plywood. Glue a small mirror to the centre of the base as shown in Fig. 1.

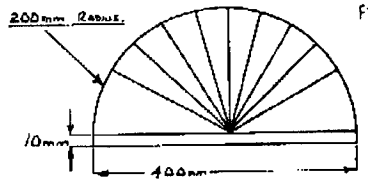


Fig. 2.

Fig. 2.
From a sheet of stiff cardboard cut out a semi-circular back plate as shown in Fig. 2. Mark lines on the back plate et 15° intervals either side of the vertical.

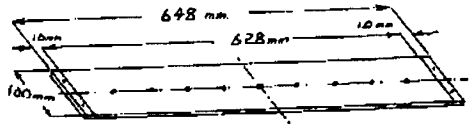


Fig. 3.

Fig. 3.
From a sheet of stiff cardboard cut out the cover as shown in Fig. 3. Using drawing pins, fix the cover to the ends of the base; this will form a semi-circle to match the perimeter of the back plate. Pierce holes in the cover to co-incide with the lines on the back plate.

7- METHOD OF USE

Place a light source (candle or lamp) et one of the holes end view through a hole opposite to the one with the lamp to see if the light is being reflected via the mirror. Measure the angles of the lines drawn on the back plate to see if the Law of Reflection is applicable (Angle of Incidence is equal to the Angle of Reflection).

8- COMMENTS

An alternative method would be to leave the back plate unmarked end pierce holes in the cover at regular intervals. Using a light source at one hole find the opposite hole where the light is reflected and then draw lines on the back plate. The angles could then be measured.

1- ITEM

REFRACTION OF LIGHT APPARATUS.

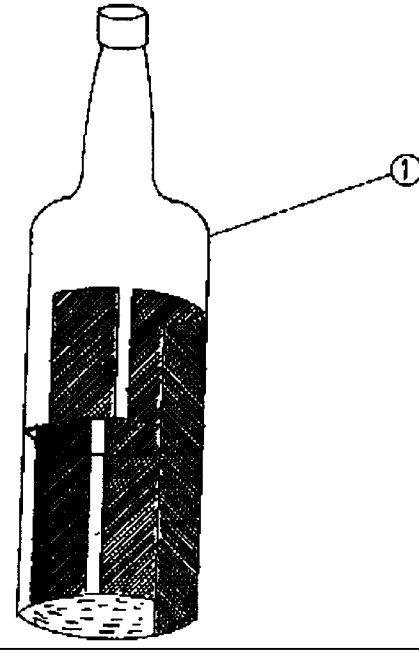
2.-PURPOSE

To demonstrate refraction of light in water.

3- INFORMATION SUBMITTED BY

Beijing Teaching Aids Centre, Hengshui Prefecture, Hebei Province, China.

4- LINE DRAWING OF PROTOTYPE



5- MATERIALS FOR CONSTRUCTION

Components	Qty	Materials Required	Dimensions
1 Bottle	1	Glass Bottle. Black paint (or ink).	As available.

6- CONSTRUCTION DETAILS

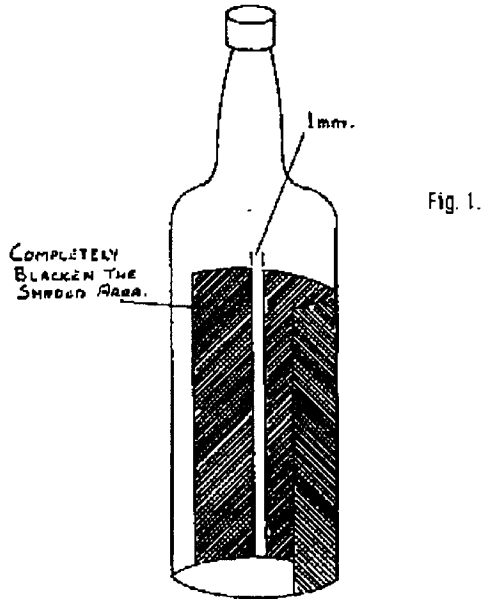


Fig. 1.

Using an empty, clear bottle paint half of the outside of the bottle with black paint, leaving a gap of approximately 1 to 2 mm as shown in Figure 1.

7- METHOD OF USE

Fill the bottle with water to half way up the black painted area. Observe the gap in the black painted area which will appear displaced when looking into the water. This clearly demonstrates light refraction in water.

8- COMMENTS

When viewing from the front ensure that the brightest light intensity is behind the black painted surface. If necessary use a shield to reduce stray light.