

Huygen's Wave Theory

Huygen's theory simply assumes that light is a wave rather than, say, a stream of particles. Experiments performed several years after Newton reveal that light does bend around obstacles (Figure 3). This phenomenon is called diffraction and is readily noticeable when the size of the obstacle is small compared to the wave length (Figure 4—distance between successive troughs or crests) of light. He explained the bending of light in refraction as a consequence of its different velocity in different media. Huygen argued that the velocity of light is inversely proportional to the refractive index of the media. The more the light was slowed the more it bent. If light were made up of streams of particles, the reverse would be true. Huygen also argued that if light was corpuscular, it could be likened to a flight of arrows, and if two flights crossed some would collide with one another. However, when two beams of light crossed, they appear not to affect each other.

Figure 3

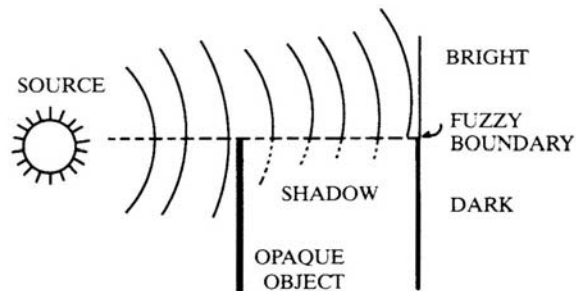
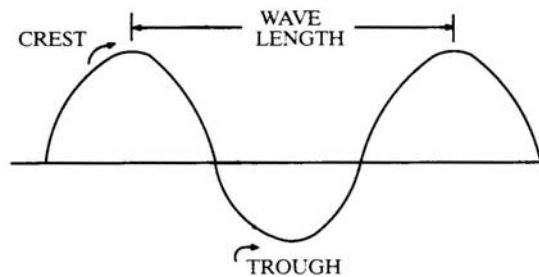


Figure 4



29. Huygen's wave theory of light is supported by
- A. sharp edges of shadow cast by opaque objects.
 - B. the pressure exerted on surfaces exposed to light.
 - C. the phenomenon called diffraction.
 - D. passing light through water.
30. Which of the following observations would NOT be consistent with the particle theory? The velocity of light
- F. depends on the refractive index of the medium.
 - G. in water is less than that in air.
 - H. in glass is greater than that in air.
 - J. does not depend on the source of its origination