



Human Eye

Eye lens consists of several transparent curved layers held together in the eye socket with the help of ciliary muscles. When no pressure is exerted by the ciliary muscles on these layers the curvature of these layers are minimum i.e. the radius of curvature is maximum and hence the focal length of eye lens in this unstrained state is maximum.

If we exert pressure by the ciliary muscles the curvature of eye lens will increase radius of curvature will decrease and hence the focal length of eye lens will decrease. This can be done up to a certain limit after which pressure can no more be increased i.e. focal length can no more be decreased. Thus eye lens has no single focal length. The focal length of eye lens in the normal state has maximum value. By exerting pressure with the help of ciliary muscles focal length can be decreased continuously up to a certain minimum value. When the image of a given object is formed at the retina by the eye lens then only the object can be seen. If an object moves towards eye, image will move behind the retina & cannot be seen, then by exerting pressure with ciliary muscles the focal length of eye is decreased to bring the image back to the retina. Thus as the object moves closer to eye the image distance kept constant throughout by decreasing the focal length of eye lens and this adjustment which comes automatically is known as Accommodation.

Far point: For a relaxed eye that is when no accommodation is applied i.e. the eye lens is in its normal condition and focal length is maximum then maximum distance up to which it can be seen distinctly is known as far point. For normal eye far point is at infinity.

Near Point: As the object approaches towards the observer accommodation starts and the object can be seen till it reaches up to a certain point beyond which it cannot be seen. The point closer to the eye up to which the object can be seen distinctly is known as near point. The distance of the near point for normal eye is known as least distance of distinct vision which is 25 cm for normal eye.

Human generally suffers from the following defects

1. Short sightness or Myopia
2. Long sightness or Hypermetropia
3. Presbyopia
4. Astigmatism