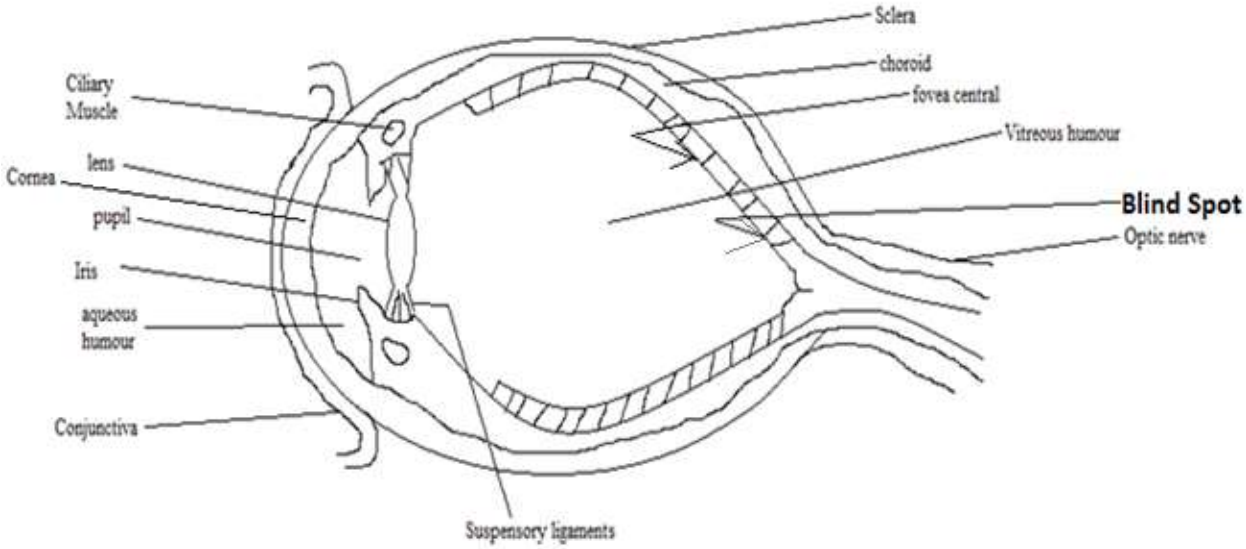
Chapter Twenty One

The Sense Organs:

— Animals as well as man, is made aware of its external environment by means of the sense organs.
— These organs are the eye, the ear, the skin, the tongue and the nose.

The eye:



— This is the sense organ which is used for sight or seeing.
— The eye is spherical in shape and is found in a cavity or hole in the skull, called the eye socket or orbit.
— The lower and the upper eyelids protect the surface of the eye from the outside.
— The blinking of the eye distributes moisture evenly over the exposed surface of the eye.
— Each eye is provided with a tear gland which produces tears, which is slightly salty or saline.
— The tears clean the exposed part of the eye and keep it moist.
— The parts of the eye are:

The Sclera

— This refers to the outer covering of the eye, which protects the inner structure of the eye.
— The front part of the sclera is modified to form the cornea, which is the transparent part of the eye which allows light to enter the eye.

The Choroid:

— This forms a layer which provides nourishment to the eye.
— The choroid layer is supplied with many blood vessels, which carry ingredients to the various parts of the eye.

The Retina:

— This is the inner layer of the eye ball which is lined with cells, which are sensitive to light.
— The retina serves as a screen on which the images are formed on the eye.
— It contains two types of light – sensitive cells, which are the rods and cones.
— Whilst the rods are responsible for night vision, the cones are responsible for day light vision and colour.
— On the retina can be found two regions, which are the fovea contralis and the blind spot.
— The fovea contralis is the most sensitive region of the retina, and it is also referred to as the yellow spot.
— Images of objects fall on this part of the retina.
— Since the blind spot contains no sensory cells, images formed on them cannot be seen, since no impulses are sent to the brain from this spot

The Lens:

— This is a transparent object which focuses images onto the retina.
— Since the lens is flexible, it can change its shape and this is different from the camera lens, which cannot change its shape.
— The lenses of the eye are held in space by the suspensory ligament.

The Iris:

— This adjusts the size of the pupil.
— When the amount of light entering the eye is too bright, the iris decreases the size of the pupil inorder to reduce the amount of light entering.
— On the other hand if the amount light is too dim, the iris enlarges the pupil inorder to allow enough light to enter the eye.

The Aqueous Humour and the Vitrous Humour:

— The space between the lens and the cornea is filled with a liquid called aqueous humour.
— It helps in maintaining the shape of the eye and nourishes it.
— Another liquid called the vitreous humour can be found between the lens and the retina.
— It also nourishes the eye and helps it to maintain its shape.

The Optic Nerve:

— Massages from the eyes are sent to the brain through the optic nerve.
— Also responses from the brain pass through the optic nerve back to the eye.

Formation of Image on the eye:

(a) Light from the object enters the eye through the cornea, and the lens focuses this onto the retina.
(b) An image is therefore formed on the retina.
(c) This image is real, inverted and diminished.

Accomodation:

— This refers to the ability of the eye lens to change its shape, so that objects at different distances can be focused on the retina.
— When viewing a distant object the lens becomes thinner, and the lens become fatter when the lens is viewing a near by object.

The far point of the eye:

— This is the furthest point the eye can see clearly.

Eye defects:

— These include long sightedness (hypermetropia), short sighted (myophia), presbyopia, astigmatism, colour blindness and glaucoma.

Long Sightedness:

— In this type of defect, the eye is able to see only distant objects clearly.
— This occurs when the eye ball is too short, causing the image to be formed not on the retina but behind it.
— This defect can be corrected by the use of a convex lens (converging lens).

Short Sightedness:

— This is the type of defect in which only nearby objects can be seen clearly.
— A short sighted person can therefore not see distant or far objects clearly.
— This defect is caused as a result of the eye ball being too long, causing the formation of the images of distant objects to occur not on the retina, but rather infront of it.
— Short sightedness is corrected by means of a concave or a diverging lens.

Astigmatism:

— This type of defect occurs when there are abnormalities in the shape of the cornea or the lens.
— Under such a condition, some of the light rays are focused on the retina, while others fall infront or behind the retina.
— This often results in eye straining and blurring for both distant and nearby objects.
— It can be corrected by the use of a cylindrical lens.